GRIZZLY BEARS OF MONTANA

A Resource Guide for Educators

Boone and Crockett Club
Montana Fish, Wildlife and Parks

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Authored By Bruce Auchly and Joe Moll
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A Resource Guide for Educators

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Foreword

I have worked around animals my entire life. Each species has something unique. Eagles have eyesight ten times better than humans have. Antelope can run as fast as the wind. Salmon can determine chemicals in a stream that are only one or two parts per million. Elk can hear sounds a mile away. These are examples of wild animals' unique abilities.

All animals have one or more unique characteristics that help them to survive in the wild. This just doesn't happen overnight. This is called natural selection. Over millions of years animals have walked the earth continually adapting to their environment. Those that did are still around; those that did not are extinct.

Humans, like all other animals have unique characteristics. The ability to walk upright and use opposing thumbs so that we can grasp and use tools are two examples. But probably the most amazing ability of all is a human's ability to think. Our brain is the largest in the animal kingdom. I have read many articles telling us we do not begin to use our brains to their fullest potential. How many times have you heard someone say, "They don't use the brains they were born with?" Another phrase I frequently hear people say is, "Use your head!" My mother used to say this when I did something stupid.

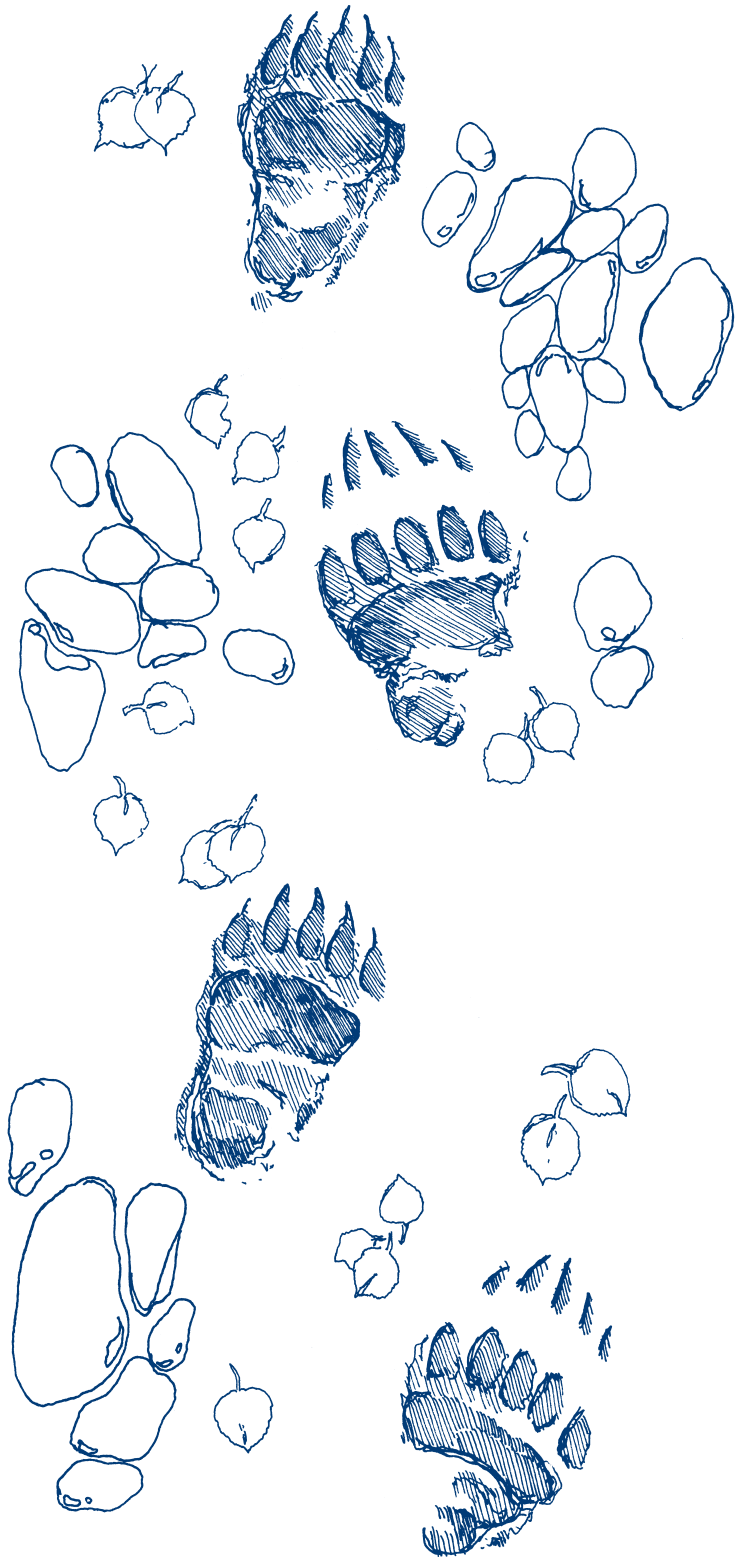
During my years of working with animals, people have frequently asked, "If you had a choice of being any animal in the animal kingdom, what would you be?" I remember sitting down one night and trying to think about just one animal I would like to be. It wasn't easy. Here are some thoughts that crossed my mind. I would like to be a bird so I could fly and see things all around me. Not just any bird, but a bald eagle. Maybe, I would like to be an African lion – the King of the Jungle. Maybe a chimpanzee and be able to swing in the trees and be with other chimpanzees in a group. A turtle also

crossed my mind so that I could live a long life. One night grew to several nights and finally after about a week, I had made up my mind. The next time someone asked me what I would choose to be, I would tell them I would choose to be a bear. I have worked with bears (grizzly and black) for over 30 years. The more I work and am around a particular animal, the more I appreciate it. The bear's sense of smell is one of the sharpest in the animal kingdom. They can run up to 40 miles per hour. Not bad for a large animal! In the fall, a bear can eat up to 20 hours a day getting ready for hibernation. And what about hibernation? Being able to sleep for six months and coming out of the den slim and trim is unbelievable. Aren't all humans jealous of that behavior? A bear's sense of hearing is very acute. The also have a long life expectancy, living from 25 to 30 years in the wild. That is good for any wild animal. They have an excellent diet, eating fruits and berries, which I like. I am not so sure I would like grass in the spring, as they do. Every once in awhile, they eat meat or fish. That all sounds pretty good to me. Their cholesterol levels have got to be low. They have a summer coat to stay cool in the warm months and a winter coat for the cold months. I think living in the woods for one's entire life would also be great. The only bad thing I can think of is they have poor eyesight compared to other wild animals. However, their sense of smell and hearing make up for their bad eyesight. Yes, if I were to be any wild animal, it would be a bear.

Vince Yannone is a biologist, researcher, and educator. He rehabilitates injured wildlife, and for 25 year he presented programs about Montana's wildlife for the Montana Department of Fish, Wildlife & Parks.

As you read and learn more about grizzly and black bears in this resource guide, I know you will respect them for what they are. In dealing with bears, one has to always remember they all have uncertain tempers. I frequently tell people that bears are predictably unpredictable. When grizzly and black bears are confronted with an unknown animal, such as man, the bears are usually wary and will probably run away. However, there is always the bold individual bear that is the exception. This guide is designed to teach you about the differences and similarities between black bears and grizzly bears and does not deal with bear behavior. For the Montana hiker, photographer, hunter, and outdoor enthusiast, it is extremely important to know the differences between these bears. Learn where these bears are found in Montana and how to observe and see them at a safe distance. Bears can be dangerous animals. They can be cantankerous, fearful, charming, fascinating, and beautiful – as well as vicious and aggressive. In my career in wildlife conservation, I have seen attitudes change considerably about the grizzly bear and black bear. More people understand the needs of bears. People are more willing to compromise their own short-term goals in order to have bears around and this is a positive step for all of us. ■

By Vince Yannone



Great Bear Revelations

Thousands of years before Christopher Columbus arrived on the North American shore, the people who lived here hunted, feared, and even worshipped bears.

Pictographs in central Montana dating back 3,000 years illustrate the importance of bears to prehistoric humans. Some pictographs portray a combination bear-shaman body. Others show bears with spears or arrows piercing the body.

Bears were part of the real world, the spiritual world—and the celestial world. Pre-Columbian Native Americans called one of their major constellations "the Bear." Apparently, ancient Europeans looked to the heavens and, like their North American cousins, also saw a bear. They named the same constellation "Ursa Major," Latin for "Great Bear." The seven brightest stars of the Great Bear form the Big Dipper.

The grizzly is also known in North American Indian myth and lore as the master forager, plant gatherer, and bestower of the secrets and mysteries of plants, especially those used for healing medicine.

The Ojibwa referred to bears as *anijinabe*, meaning Indian. Many Native Americans believed the bear was half human. The Yavapai of Arizona claimed "bears are like people except that they can't make fire." Bears were honored. When a bear was killed, the hunter asked its spirit for forgiveness. Carcasses were treated with reverence. Because of the kinship felt with this human-like creature, the ritual for a slain bear was more elaborate than for other animals. Like a human, the bear stands on two feet, uses its paws to reach for things, and eats plants, berries, and meat. The sow bear is a good mother and will aggressively protect her cubs. She teaches

BY ANY NAME

Many Native peoples regarded the bear as a sacred symbol of power and strength. Some Blackfeet Indians would not say the animal's name out loud, and even today will not. The grizzly was referred to as "grandfather" and "badger," so it could be discussed without direct reference. Nearly every group of people in North America and Europe referred to the bear as Grandfather and Grandmother, and tribes often had dozens of alternative names, such as:

Divine One Who Rules the Mountains – Ainu
Kya'io = bear – Blackfeet
Sikohkya'iyo = black bear – Blackfeet
Nitapohkya'iyo = grizzly bear – Blackfeet
Paxikuyi "sticky mouth" = grizzly bear – Blackfeet
Ozimiohkya'iyo = brown bear – Blackfeet
Angry One – Cree
Daxpitche'e - Crow
Winter-sleeper – Lapp
Fine Young Chief – Navajo
Smxe - Salish
Matohota "gray bear" – Sioux

and cares for her offspring for two or more years.

Native Americans hunted bears for meat, hides, and claws, and to display bravery and skill. However, Blackfeet, Arapaho, and Cheyenne Indians, among others, refused to eat bear meat. They felt it would be like eating another human or a relative.

LEGENDS

Many Indian bear stories involve a woman mating with a bear. Other common tales revolve around killing a bear with great ceremony. Another common story theme entails bears rescuing humans or teaching them valuable lessons. Sometimes, a character in a story shifts shape between bear and human. Here are some stories and traditions illustrating the bear's relationships with various tribes:

Stubborn Since Birth (Crow)

According to Crow Indian legends, the grizzly has challenged others since his creation. After Old Man Coyote made him, Bear

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

PRE-1800s

Around 100,000 grizzly bears roam widely across the West, sharing territory with Native American peoples.

■ Grizzly Country in 1800.

1804-06

The Lewis & Clark Expedition encounters the first grizzly bears along the Missouri River at the present-day North Dakota-Montana border. By the time the expedition is over, approximately 43 bears have been killed (most bears were encountered along the Missouri and Yellowstone Rivers).

1807

Montana's first European settlement is established in Stevensville.

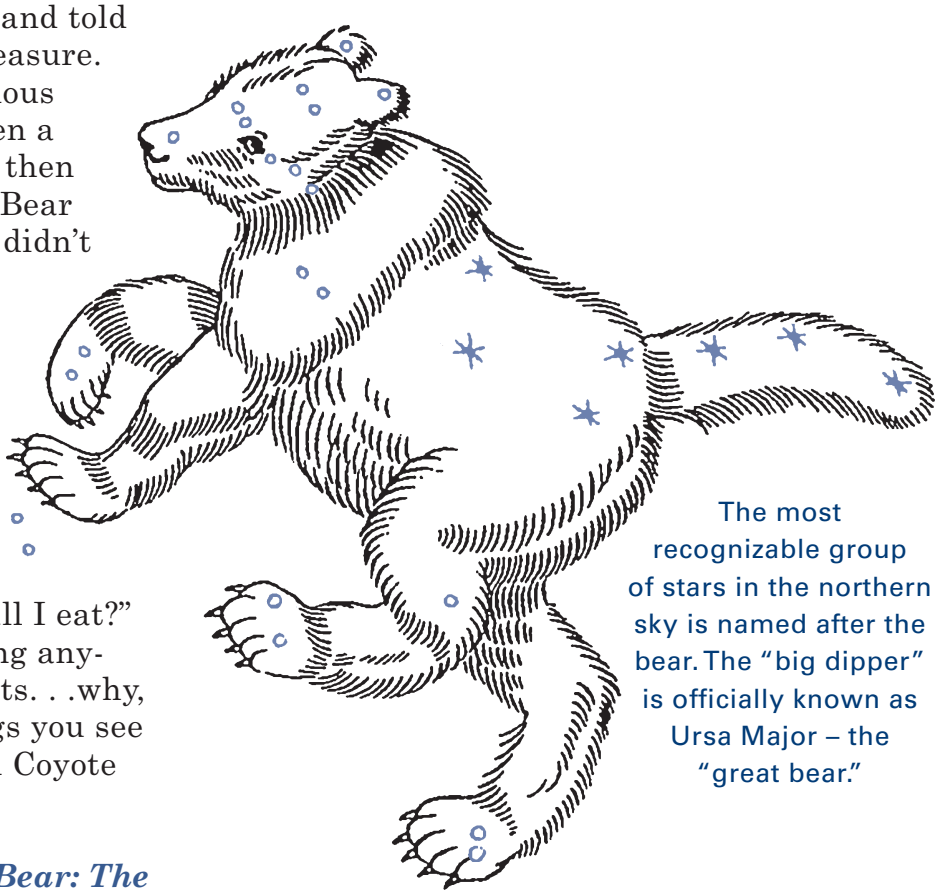
1800-1840s

Fur traders and trappers frequently encounter grizzly bears. Bears are killed for self-preservation, sport, status, meat, and money ($5 per hide). The trading post at the Three Forks of the Missouri is abandoned because of persistent conflict with Blackfeet Indians and grizzly bears.

MID- 1800s

European Americans settle in the West and set up ranches. Grizzlies prey on livestock and are killed. Improved firearms, traps, and poisons speed the destruction of bear populations.

claimed he made himself: "By myself I have grown." As proof of his powers, Old Man Coyote made a prairie chicken and told the bird to dance for pleasure. This made the bear jealous because he was not given a dance. Old Man Coyote then told the bear to go, but Bear whined and claimed he didn't know where to go. "You are bad, you are quick-tempered, you are bad, stay in a hiding place. Stay among the woods, also in the mountains. Whatever you do, you'll be a failure," exclaimed Old Man Coyote. "What shall I eat?" "You shall keep on eating anything that grows. . . roots. . .why, whatever decayed things you see you shall eat." Old Man Coyote was greatly displeased.



The most recognizable group of stars in the northern sky is named after the bear. The "big dipper" is officially known as Ursa Major – the "great bear."

Three Brothers and a Bear: The Big Dipper (Tribe Unknown)

Three Indian brothers were hunting and shot a bear in the back. Bears seek the most re-

1862 The Homestead Act causes rapid conversion of native vegetation to agricultural lands. From the early homestead era through the early 1930s, bears, wolves, and other large predators are considered a threat to settlers' livelihoods, so are extirpated from much of their original range across Montana. Grizzly bears survive in only the most remote, mountainous regions in the state.

1872 National Organic Act establishes Yellowstone National Park for the benefit and enjoyment of the people. Sport and subsistence hunting is allowed in the park.

1883 Congress passes the Sundry Civil Bill, which allows the Secretary of the Interior to enlist military troops to aid in policing Yellowstone National Park and protecting the wildlife. (Troops finally arrive in Yellowstone in 1886.)

1886 The killing of grizzly bears in Yellowstone National Park is prohibited.

1894 Congress passes the Lacey Act to protect Yellowstone National Park's natural resources, and a commissioner (judge) is appointed to preside over legal cases within the park.

1900s

mote and secret place to hide when in danger, so this bear ran toward the tallest mountain. The brothers followed it so closely and persistently that the bear reached the top and kept running right into the sky. The brothers did not give up, and followed the bear. The chase continues today with The Great Bear running across the sky, as the four "cup" stars of the Big Dipper. The hunters are in hot pursuit as the handle of the dipper. The faint star close to the second hunter is a cooking pot in case the brothers finally catch the bear.

Bear Knife (Piegan)

Long ago a young Piegan was determined to obtain some secret power that would bring him success in war. He entered a cave when searching for a fasting place and saw a mother bear and her cubs. The young man pleaded with the sow not to hurt him, and eventually she let him play with her cubs. He stayed in the den for four days and nights without food or water and prayed to the bear to give him her powers. He finally fell asleep and dreamed a male and female bear appeared. They each gave him pipes and lodges decorated with bears images. The mother bear gave him a knife with a bear-jaw handle. She threw the knife at him, and he grabbed it before it could harm him. She instructed him to always charge and attack in battle.

The bear knife was coveted as Blackfeet war medicine. The handle had bear jaws and feathers bound to its wood or bone handle. Only a very brave man dared purchase a bear knife because the transfer ceremony was very dangerous. The owner pushed the naked purchaser onto a bed of thorns within his lodge then hurled the knife at him. If the petitioner caught the knife, he became the new owner.

Grizzly Powers (Blackfeet)

Great power came from animals and the weapons those animals bestowed on the warrior. Once, a

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

1900

A second Lacey Act is established for two principal purposes. First, to strengthen and supplement state wildlife conservation laws, and second, to promote the interests of agriculture and horticulture by prohibiting the importation of certain types of wildlife determined to be injurious to those interests.

1915

The first bear-caused human death in Yellowstone National Park is recorded.

1916

The National Park Service (NPS) is created.

1921

Hunting bears with dogs is prohibited in Montana and a statute enacted against enticing or baiting game animals.

■ Grizzly Country in 1800.

1923

Glacier National Park is established for its aesthetics and conservation values, with strong support of the Boone & Crockett Club. The park protects excellent bear habitat.

WEARING THE BEAR

Folklore, religion, and legends help us understand the respect Native Americans had for the grizzly's strength, aggression, and lack of fear. Wishing these qualities for themselves, warriors wore grizzly claws in their hair or as necklaces, or painted bears on their shields or lodges.

The Crow Big Dog Society included a man who wore a belt of bear skin with the legs and claws, or naxpitse-iherupte, meaning "bear around the waist." This man was expected to be exceptionally brave. He was to approach the enemy regardless of danger, never retreat, and rescue other tribesmen in trouble. Performing these duties allowed the belt-wearer to eat first at feasts, lead Big Dog members in dancing, and take other positions or duties of honor.

PEHRISKA-RUHPA
A Minatarre or Big-bellied Indian
By Karl Bodmer (1809-1893)
Courtesy of Montana Historical Society, Helena

1923

Montana Game Commission reclassifies the grizzly bear from predator to game animal. This places restrictions on grizzly hunting and gives the state authority to manage bears through harvest limits and hunting seasons.

1930

Predator control and the use of poisons in the western states is extensive; many bears are killed by the poison strychnine.

1940

Bob Marshall Primitive Area is established a year after Bob Marshall dies. This is the first piece of the eventual Bob Marshall Wilderness Complex.

1946

Grizzly bear hunting is prohibited by law in Idaho.

1947

Killing bear cubs or female bears with cubs is prohibited in Montana.

1953

Population surveys indicate an increase in grizzly numbers. However, more accurate population trend monitoring and density estimates are needed before any conclusions can be drawn.

Blackfeet chief had lost a dog travois that contained his ermine-skin suit and his wife's sacred elk-skin robe. The chief's 12-year-old son, Sokumapi, was determined to find the travois. The boy returned to their old camp and followed a single travois track into a rocky ravine. He found the travois at the entrance to a large cave nearly covered by berry bushes. Suddenly a huge grizzly bear appeared at the entrance and grasped the boy with its paws, carrying him into the cave. Sokumapi lived in the cave with the giant grizzly all winter, eating wild berries and buffalo chips that the bear transformed into rich pemmican. When spring came, the Medicine Grizzly bestowed upon Sokumapi his supernatural power and directions for making the Bear Spear:

"To one end of a long stick attach a sharp point to represent grizzly tusks. Tie bear teeth to the staff, a bear's nose, eagle feathers, and cover the staff with bear skin painted with sacred red paint. Tie grizzly claws to the handle so they rattle like the noise a grizzly makes when he runs. Always wear a grizzly claw in your hair, and imitate the noise a grizzly makes when he charges, so the enemy will be afraid and run away. The spear must only be used in battle and for healing the sick."

Immediately upon his return to the Blackfeet camp, Sokumapi made the sacred Bear Spear, which he used to help the Blackfeet defeat the Crow Indians in battle. Sokumapi was made a war chief and the people knew that the Bear Spear was endowed with supernatural power. The sharp spear point is removed and the spear put away in late autumn, when the bear disappears for the winter.

Friendly Medicine Grizzly (Blackfeet)

The Blackfeet chief Nis-ta-e had left camp with three other chiefs to steal horses from the Snake Indians. Their attempt failed and they fled into a thicket of poplars

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

1959

Scientists John and Frank Craighead initiate a study of the Yellowstone grizzlies to discover more about the bears' habitat and habits.

1964

Congress passes the Wilderness Act. The Bob Marshall Primitive Area is designated a Wilderness Area of 949,356 acres.

1967

The first fatal maulings occur in Glacier National Park. Two people are killed. The book Night of the Grizzly shocks the nation.

National Park Service (Glacier National Park) develops the first bear management plan.

The first grizzly hunting license is sold; Montana Dept. of Fish and Game (MDF&G) charges a trophy license fee for any bear killed.

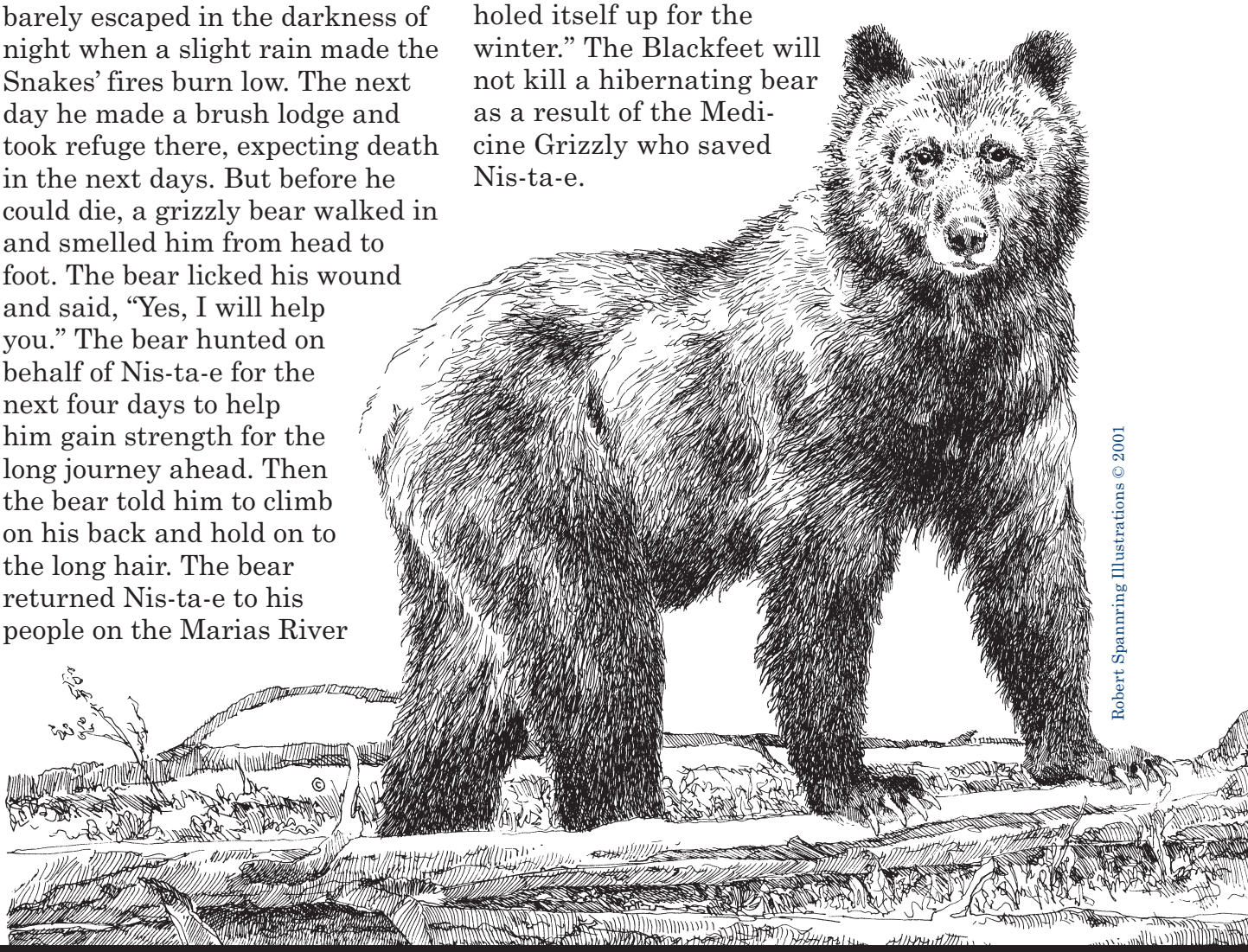
1967-1976

Scientists find that the population of grizzlies in Yellowstone National Park has greatly diminished due to closure of park dumps and human-bear conflicts.

1969

National Environmental Policy Act (NEPA) is implemented and sets the stage for assessment of human impacts on wildlife habitat.

and underbrush. The three other chiefs were killed, and Nis-ta-e was shot through the knee. He barely escaped in the darkness of night when a slight rain made the Snakes' fires burn low. The next day he made a brush lodge and took refuge there, expecting death in the next days. But before he could die, a grizzly bear walked in and smelled him from head to foot. The bear licked his wound and said, "Yes, I will help you." The bear hunted on behalf of Nis-ta-e for the next four days to help him gain strength for the long journey ahead. Then the bear told him to climb on his back and hold on to the long hair. The bear returned Nis-ta-e to his people on the Marias River (Bear River - Blackfeet). "The only favor I ask of you in return is that you will never kill a bear that has holed itself up for the winter." The Blackfeet will not kill a hibernating bear as a result of the Medicine Grizzly who saved Nis-ta-e.



Robert Spannring Illustrations © 2001

1971

Montana Environmental Policy Act (MEPA) is passed.

1972

The 239,296-acre Lincoln-Scapegoat Wilderness Area is added to the Bob Marshall Wilderness Area. This action enlarges the habitat protection for bears in the Northern Continental Divide Ecosystem.

1973

Endangered Species Act passes.

The Interagency Grizzly Bear Study Team is founded to gather information on the grizzly bear and aid in its management in the Yellowstone Ecosystem.

1974

A moratorium is placed on grizzly hunting in the Yellowstone Ecosystem.

Grizzly hunting season in the Cabinet-Yaak Ecosystem is closed.

The Border Grizzly Project Research Studies conducted by the University of Montana are initiated in northwestern Montana to collect the first baseline grizzly bear ecology information in the area.

1975

The grizzly bear is listed as threatened in the lower 48 states by the U.S. Fish & Wildlife Service (USFWS) under terms of the Endangered Species Act.

continued on next page...

BEARS IN THE LEWIS AND CLARK ERA

Although Western Indian tribes knew much about grizzlies, members of the Lewis and Clark expedition were familiar only with black bears of the eastern forests. Just a small number of Europeans had seen grizzlies and descriptions were elusive. Lewis and Clark's detailed accounts led to the bear's formal, scientific classification.

> THE WHITE BEARS HAVE BECOME SO TROUBLESOME TO US THAT I DO NOT THINK IT PRUDENT TO SEND ONE MAN ALONE ON AN ERRAND OF ANY KIND... MERIWETHER LEWIS

The expedition met its first grizzly in the spring of 1805 on the Missouri River near the present-day Montana-North Dakota border. They had heard plenty about grizzlies while spending the previous winter with the Mandan Indians. The Mandans told of hunting grizzlies in parties of eight to ten men and treating the hunt with the same seriousness as if going to war. A bear hunt often led to the deaths of many hunters as the grizzly would attack rather than run, and the guns, "fuzees," supplied by British fur traders, were ineffective.

On April 29, 1805, Meriwether Lewis had his first encounter with a grizzly and didn't see much to fear. "... the Indians may well fear this anamal equiped as they generally are with their bows and arrows or indifferent fuzees, but in the hands of skillful riflemen they are by no means as formidable or dangerous as they have been represented."

The expedition co-leader changed his mind within two weeks: "... these bear being so hard to die reather intimedates us all; I must confess that I do not like the gentlemen and had reather fight two Indians than one bear; there is no other chance to conquer them by a single shot but by shooting them

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

1975 continued

An annual quota of 25 human-caused grizzly bear mortalities, including hunting, is implemented in Northwestern Montana.

The Mission Mountain Primitive Area is established as a 73,877-acre wilderness area to provide more habitat security for the grizzly bear.

1976

A 60,000-acre addition is made to the Bob Marshall Wilderness Area.

The 286,700-acre Great Bear Wilderness Area is established, providing a land corridor between Glacier National Park and the Bob Marshall Wilderness for

1978

The Greater Yellowstone Ecosystem Management Guidelines are developed. This is the first cooperative effort to recover, protect, and manage the grizzly.

Rocky Mountain Front (RMF) Grizzly Bear Research Studies are initiated and conducted by the MDF&G over a 10-year period. Important ecological information is gathered on one of the last prairie and foothill regions in the world still occupied by grizzlies.

The National Forest Management Act (NFMA) is passed, requiring all National Forests to develop programmatic plans that outline management criteria and prescriptions to maintain indigenous wildlife species.

through the brains, and this becomes difficult in consequence of two large muscles which cover the sides of the forehead and the sharp projection of the center of the frontal bone, which is also of a pretty good thickness."

By the time the expedition reached the Great Falls of the Missouri, the "white bears" had chased several of the men up trees or into the river, earning the respect of the entire expedition. Lewis wrote: "The white bears have become so troublesome to us that I do not think it prudent to send one man alone on an errand of any kind... they come close arround our camp every night but have never yet ventured to attack us and our dog gives us timely notice of their visits, he keeps constantly padroling all night. I have made the men sleep with their arms by them as usual for fear of accedents."

Lewis learned firsthand about the "troublesome" bear while he was looking for a portage around the Great Falls. Along the north shore of the Missouri, near the mouth of the Sun River, Lewis shot a buffalo. He became so intent on watching the animal, waiting for it to die, that he forgot to reload his rifle. Meanwhile, a grizzly "crept on me within 20 steps before I discovered him; in the first moment I drew up my gun to shoot, but at the same instant recolected that she was not loaded and that he was too near for me to hope to perform this operation before he reached me."

Lewis decided his only recourse was to run to the river. "... the idea struk me to get into the water to such debth that I could stand and he would be obliged to swim, and that I could in that situation defend myself with my espontoon." A spontoon is a spear-like weapon about six feet long. Lewis' plan worked. At the riverbank the bear turned off and ran away. The intrepid explorer didn't delude himself into thinking he

1978 continued

grizzly bears and other wildlife. The Bob Marshall Wilderness Complex (BMWC) is now composed of three contiguous wilderness areas of nearly 1.5 million acres, including 100 miles of the Continental Divide. Larger than the state of Delaware, the 2,398-square-mile complex provides habitat protection and security for bears.

1980

The Rattlesnake Wilderness Area is established, adding 29,609 protected acres to the Northern Continental Divide Ecosystem (NCDE).

1981

Confederated Salish & Kootenai Tribes write Flathead Indian Reservation Grizzly Bear Management Plan. Tribes establish the 91,778-acre Mission Mountain tribal wilderness.

The first truly comprehensive amendments are made to the Lacey Act. The new amendments pertain to provisions prohibiting certain dealings in specimens taken, transported, or sold in violation of underlying state, federal, or foreign laws.

1982

Federal Grizzly Bear Recovery Plan is approved for the lower 48 states and identifies actions necessary for the maintenance, survival, and recovery of grizzly bears.

Grizzly bear hunting is closed on Flathead Indian Reservation.

Hunting of the Grizzly Bear
by Karl Bodmer
(1809-1893)
Aquatint with engraving.
Courtesy of Montana Historical Society, Helena

scared the grizzly, but he couldn't offer an explanation for the animal's behavior. "...the cause of his allarm still remains with me misterious and unaccountable."

JOE MEEK: TWO BARES AND A BAR

As trappers, explorers, and settlers followed the expedition's lead through the next century, the bear's exploits grew while its numbers decreased. In most

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

1983

Female grizzly bear hunting subquotas are established for the Northern Continental Divide Ecosystem.

Montana Dept. of Fish, Wildlife and Parks (MDFW&P) and US FWS initiate Cabinet-Yaak Grizzly Study

The Interagency Grizzly Bear Committee (IGBC) is established to effectively coordinate management of both state and federal (USFS, USFWS, BLM, NPS), activities for the lower 48 states within the recovery areas of MT, WY, ID, WA, and including the Canadian provinces of British Columbia and Alberta.

1984

MDFW&P initiates a programmatic environmental impact statement on all aspects of grizzly management for northwest Montana.

MID-1980s

Management and public education efforts increase, as well as awareness of and concern for grizzlies.

Forest plans are completed for many national forests, outlining programmatic direction for resource management, including grizzly bears. The national forests contain approximately 20 million acres of grizzly bear habitat, about 75 percent of the recovery areas.

1986

For two consecutive years, research studies indicate an increase in the number of grizzly bears in the GreaterYellowstone Ecosystem; 25 females and 48 cubs are counted—the highest

cases the bear suffered at the hands of humans. Occasionally, however, the exploits were humorous. Consider the case of mountain man Joe Meek during a hunt on the Yellowstone River in 1830.

"The first fall on the Yellowstone, Hawkins and myself were coming up the river in search of camp when we discovered a very large bar [bear] on the opposite bank. We shot across, and thought we had killed him, fur he laid quite still. As we wanted to take some trophy of our victory to camp, we tied our mules and left our guns, clothes, and everything except our knives and belts, and swum over to whar the bar war. But instead of being dead, as we expected, he sprung up as we come near him, and took after us. Then you ought to have seen two naked men run! It was a race for life, and a close one, too. But we made the river first."

Meek and his companion jumped in the river with the grizzly close behind. "You can reckon that I swam! Every moment I felt myself being washed into the yawning jaws of the mighty beast. . . but the current was too strong for him. . . I made haste to follow Hawkins, who had landed on the side of the river we started from, either by design or good luck: and then we traveled back a mile and more to whar our mules war left—a bar on one side of the river, and two bares on the other!"

Extirpation

When human and grizzly met, the outcome was usually not so comical. Throughout the 19th century West, grizzlies were killed indiscriminately. Bears were shot from fear, for sport, for food, and to protect life and property. Grizzlies were especially threatening to farmers and ranchers trying to protect livestock and livelihood.

The great bear's historic range covered much of North America west of the Mississippi River: from the plains westward to California and from central

number recorded in modern history. IGBC adopts the interagency grizzly bear management guidelines for all ecosystems.	The Blackfeet Tribe begins a study to describe grizzly bear habitat use, habits, and population dynamics.	Yellowstone fires burn more than 1.4 million acres in and around the nation's oldest national park. The fires have a minimal impact on the grizzly bear population.
1986 continued	**1987**	**1988**
	MDFW&P initiates a grizzly bear study for the South Fork of the Flathead River. The study is to determine population and habitat use and the effects of multiple-use forest management on grizzly bears.	A Grizzly Bear Management Program is implemented by the MDFW&P for the NCDE east of the Continental Divide. The first of its kind, the RMF Grizzly Bear Management Program uses ecological information and is tailored around the concerns of local residents.

THE ENDANGERED SPECIES ACT

Any discussion of grizzly bears requires at least a brief explanation of the federal Endangered Species Act. The ESA was first passed in 1973, with amendments added in 1978 and 1982. Before passage of the ESA, there was no federal program with a central mandate to protect rare animals. The act recognizes degrees of vulnerability and protection. In Montana, the grizzly bear is listed as threatened. Endangered species are those in danger of extinction throughout all or a portion of their range.

Mexico north through Canada and Alaska. By the early years of the 20th century, grizzlies had either been extirpated from most of the West or were on their way out. The grizzly bear disappeared from Texas by 1890, California (where the bear is on the state flag) by 1922, Utah by 1923, Oregon and New Mexico by 1931, and Arizona by 1935. In Colorado, no bears had been seen for decades until a grizzly was killed in the southwestern part of the state in the late 1970s.

In the lower 48 states, fewer than 1,000 grizzlies are thought to still exist south of the Canadian border, distributed among just five ecosystems (see page 33). Today's Lower 48 grizzly population is less than one percent what it was when Lewis and Clark made their trip west 200 years ago. Canada, however, has about 22,000 grizzlies, and Alaska is home to more than 30,000. ■

HISTORICAL TIMELINE FOR MONTANA GRIZZLIES

1989

The oldest known wild grizzly bear (34 years old) sheds its radio collar in the Cabinet Mountains and is presumed healthy.

A Grizzly Bear Reintroduction Plan is approved for the Cabinet-Yaak Ecosystem.

MDFW&P estimates that there are between 492 and 687 grizzly bears in the entire NCDE, including Glacier National Park.

1991

MDFWP conducts a five-year update of the Programmatic Environmental Impact Statement.

A federal judge in Washington D.C. halts all grizzly bear hunting in Montana based on a lawsuit challenging authority of the state and federal governments to hunt a federally threatened species.

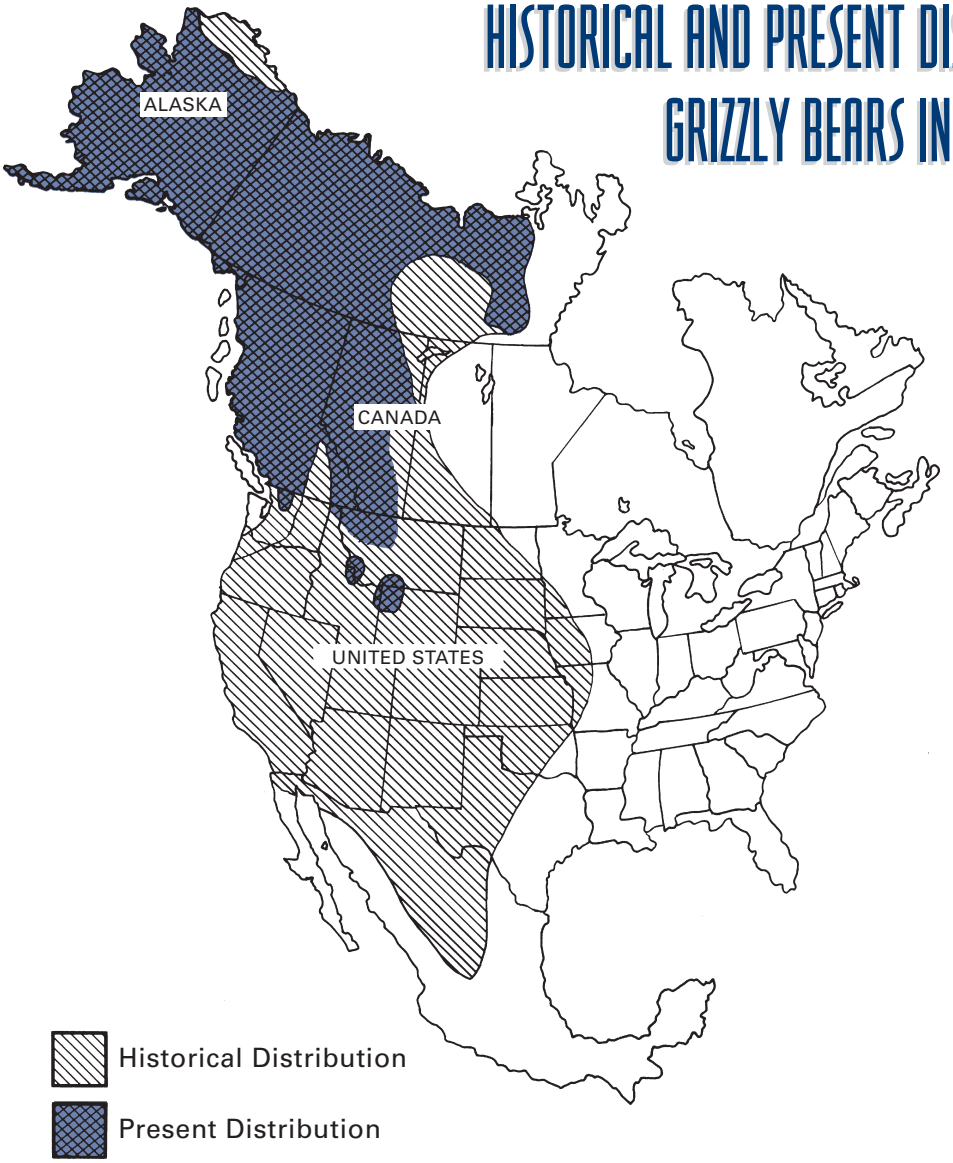
1993

MDFW&P develops a Grizzly Bear Management Plan for the western side of the NCDE.

The 1982 Grizzly Bear Recovery Plan is revised.

South Fork Study describes reduced bear use in areas of forest roads and human use, and begins to affect forest management.

HISTORICAL AND PRESENT DISTRIBUTION OF GRIZZLY BEARS IN NORTH AMERICA



1994

IGBC initiates conservation strategies based on the collection and documentation of existing management practices along with new information for the Yellowstone and NCDE populations. The Endangered Species Act requires strategies to be in place in order to delist a recovered grizzly bear population.

1998

Yellowstone's grizzly population continues to grow; 35 females with 72 cubs are recorded.

1994-1999

New and better scientific information is collected in the Yellowstone ecosystem showing grizzly populations growing at 4 to 7 percent each year. Bears are expanding their range 20 to 40 miles outside the recovery zone.

1998

Glacier National Park initiates an interagency project using a genetic-DNA sampling method that analyzes grizzly bear hair collected by "hair snares" at monitored sites. Preliminary results are promising for providing more accurate grizzly population estimates.

Black bears can be black, brown, cinnamon, blonde, blue, or white.

CHAPTER 2

Meet the Bears

There are eight species of bears in the world today. Three live in North America, all in the family Ursidae: the black bear *(Ursus americanus)*, grizzly bear *(U. arctos)*, and polar bear *(U. maritimus)*. Black bears and grizzlies are both found in Montana.

Scientists believe the first bear ancestor appeared approximately 20 million years ago as a dog-sized animal. *Ursus elemensis* displayed the molars that have allowed bears to evolve as omnivores, eating everything from grass to elk calves. Beginning about five million years ago, a number of bear species arose and disappeared.

PAINTED DEPICTION OF THE CAVE BEAR
Courtesy of Chicago Museum of Natural History

BLACK BEARAS

Black bears are primarily a forest animal, which helps explain a mother black bear's behavior when defending her young. When threatened, the cubs will climb trees while the mother runs a short distance or climbs another nearby tree. The female black bear is less aggressive than a female grizzly when it comes to protecting her young.

The name "black bear" can be misleading. Although about six out of ten black bears are black, the rest ranging in color from blond, to dark brown, to cinnamon. There are even white (Kermodes

GRIZZLY BEAR
Photo by Ron Shade

bear) and blue (Glacier bear) color variations found in Canada.

An estimated 11,000 black bears call Montana home. Adult black bears average 5 to 6 feet in length, with males weighing 170 to 480 pounds and females ranging from 130 to 305 pounds. The record live weight of a Montana black bear is 505 pounds. Black bears weigh about half a pound at birth. On average, Montana's adult black bears are smaller than their counterparts in the eastern United States.

GRIZZLY BEARS

Ursus arctos goes by several different common names, including brown bear, grizzly, silver tip, Kodiak bear, and Alaskan brown bear. The term "grizzly" refers to the way in which silver-tipped guard hairs make some brown bears appear "grizzled."

Every brown bear in North America belongs to one of two subspecies: *U. a. horribilis*, or *U. a. middendorffi. "Horribilis"* is by far the most common, found nearly throughout the brown bear's entire existing range, from Wyoming to Alaska. *U. a. middendorffi* is an isolated population that exists only on Kodiak, Afognak, and Shuyak islands off the Alaskan coast. Both subspecies are of the basic "circumpolar" brown bear stock found in Europe, Asia, and North America. (Species that range across Europe, Asia, and North America are said to have a "circumpolar" distribution.)

We often think of the grizzly bear as a mountain wilderness animal. However, considering the grizzly's size, power,

EIGHT SPECIES OF BEARS LIVE IN THE WORLD TODAY

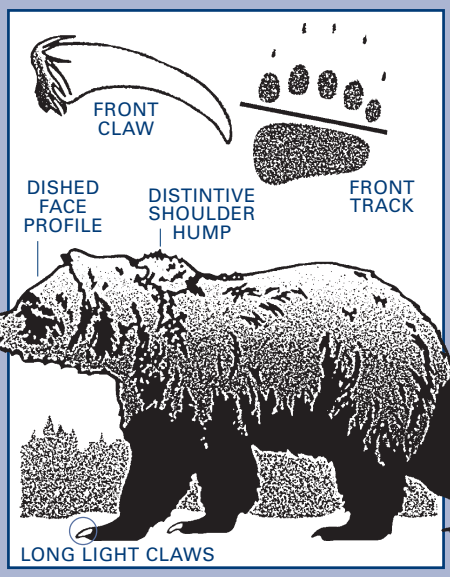
For more information on each of the eight species, contact www.bearbiology.com.

and wide range of food habits, some biologists argue that grizzlies evolved in open forests and plains. For example, the lack of trees on the prairie for cover or escape could explain the bear's aggressive behavior. With no place to climb or hide, it had to be aggressive defending itself, its young, and its food sources. Contrast such an evolutionary strategy with black bears that spend more of their time in densely forested areas. It is interesting to note that some brown bear populations in other, forested parts of the world have physical and behavioral characteristics more similar to the American black bear than the grizzly.

Grizzlies in Montana tend to be up to twice as large as black bears of the same age and sex. Although they only weigh about one pound at birth, adult, male grizzlies can tip the scales anywhere from 200 to 800 pounds; adult females range from 150 to 330 pounds. The record weight for a live Montana grizzly is 1,018 pounds (1939 Upper Boulder River). In the wild, a grizzly can live 25 to 36 years. ■

GRIZZLY OR BLACK?

There are four main physical differences between black and grizzly bears: body shape, face, claws, and tooth length. The first three characteristics can be observed from a distance. The fourth requires close investigation.



GRIZZLY BEAR

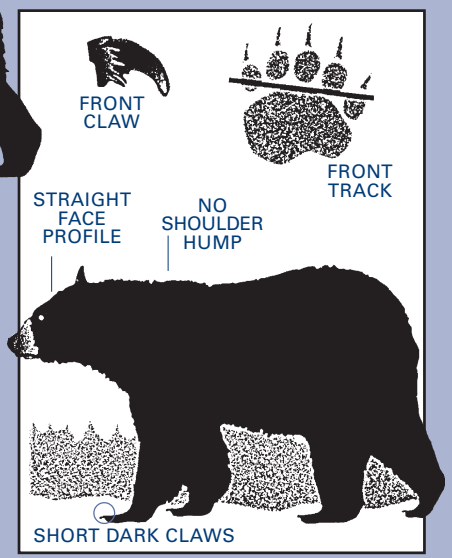
■ Adult grizzlies generally have a hump between their front shoulders. Black bears do not. When walking on all fours, the highest point of a black bear's body is its rump; on a grizzly, the highest point is between the front shoulders.

■ Adult grizzlies have a dished face profile. Adult black bears have a straight face profile, sometimes called a Roman nose.

■ The claws on the front foot of an adult grizzly are 2 to 4 inches long and make excellent digging tools. They are rarely less than 1 3/4 inches long. The claws on black bears are seldom longer than 1 1/2 inches. The shorter claws make for better climbing, but they are not as efficient as a grizzly's for digging.

■ The last major difference between the two bear species lies in the mouth, though it's a spot few people want to inspect. A black bear's last upper molar measures less than 1 1/8 inches long, whereas the same tooth in a grizzly's mouth is longer than 1 1/8 inches.

COLOR, SHAPE, AND SIZE CAN SOMETIMES BE MISLEADING



BLACK BEAR

See web site for a Bear Identification test – fwp.state.mt.us

GRIZZLY BEAR TRACKS IN THE SNOW
Photo by Mike Madel/MFWP

ROCKY MOUNTAIN FRONT (RMF) FROM HIGHTOWER RIDGES
Photo by Mike Madel/MFWP

Where the Grizzlies Roam: Habitat and Range

Animals are supported by their habitats—the forests, meadows, prairies, mountains, and streams where they live. Because grizzlies require large, diverse areas to survive, grizzly bear habitat is also home for elk, bald eagles, mountain sheep, trout, squirrels, leopard frogs, and hundreds of other animals and plants. Wildlife serves as an indicator of a quality environment for humans. Some people live in Montana and the neighboring states because they enjoy a certain quality of life not found in states without grizzlies. If grizzlies disappear, what does that indicate about our human habitat?

GRIZZLY BEAR HABITAT IS ALSO HOME FOR ELK, BALD EAGLES, MOUNTAIN SHEEP, TROUT, SQUIRRELS, LEOPARD FROGS, AND HUNDREDS OF OTHER ANIMALS AND PLANTS.

Grizzly bears focus on different food sources depending on where they live. East of the Continental Divide and south into Yellowstone National Park, bears concentrate on roots, tubers, berries, bulbs, and nuts from the whitebark pine *(Pinus albicaulis)*. Animal matter (which includes everything from insects to buffalo) comprises from 30 to 70 percent of the diets of Yellowstone's grizzlies (with the average around 30 percent), making that population the most carnivorous bears in the lower 48 states. Bears west of the divide rely on much the same diet, though energy from fruit sugars is the most important part of a bear's caloric intake. These major diet items likely explain habitat use patterns.

Studies of grizzlies in the Northern Continental Divide Ecosystem show that nearly 90 percent of their habitat use occurs in five groups: timber, mesic sites (moderately moist areas such as

GRIZZLY BEAR CUB (OF THE YEAR) STANDING IN THE CREEK
Photo by Alan Carey

seeps, creek bottoms, and avalanche chutes), aspen stands, burns, and talus slopes. Shrub fields maintained by natural fires are very important for their production of high energy fruits.

HOME IS WHERE THE ECOSYSTEM IS

Currently, only five self-perpetuating or remnant grizzly bear populations exist south of the Canadian border. Those populations are found in wild areas of Wyoming, Washington, Idaho, and Montana. In the recent past, grizzlies also survived in the Bitterroot Mountains and surrounding wild areas of Idaho. These areas are called grizzly bear ecosystems.

Some people are convinced a remnant grizzly bear population survives in the rugged southwestern corner of Colorado. An adult female was killed in Colorado's San Juan National Forest in 1979, but subsequent field research failed to confirm the area held resident bears.

Grizzly bears have also been reported in the Mexico's Sierra del Nido, but there is no hard evidence of their existence.

The following five ecosystems have confirmed grizzly bear populations.

Greater Yellowstone Ecosystem

Grizzly bears presently occupy more than 9,300 square miles of mountainous terrain in and around Yellowstone National Park. This area includes Yellowstone National Park, Grand Teton National Park, John D. Rockefeller Memorial

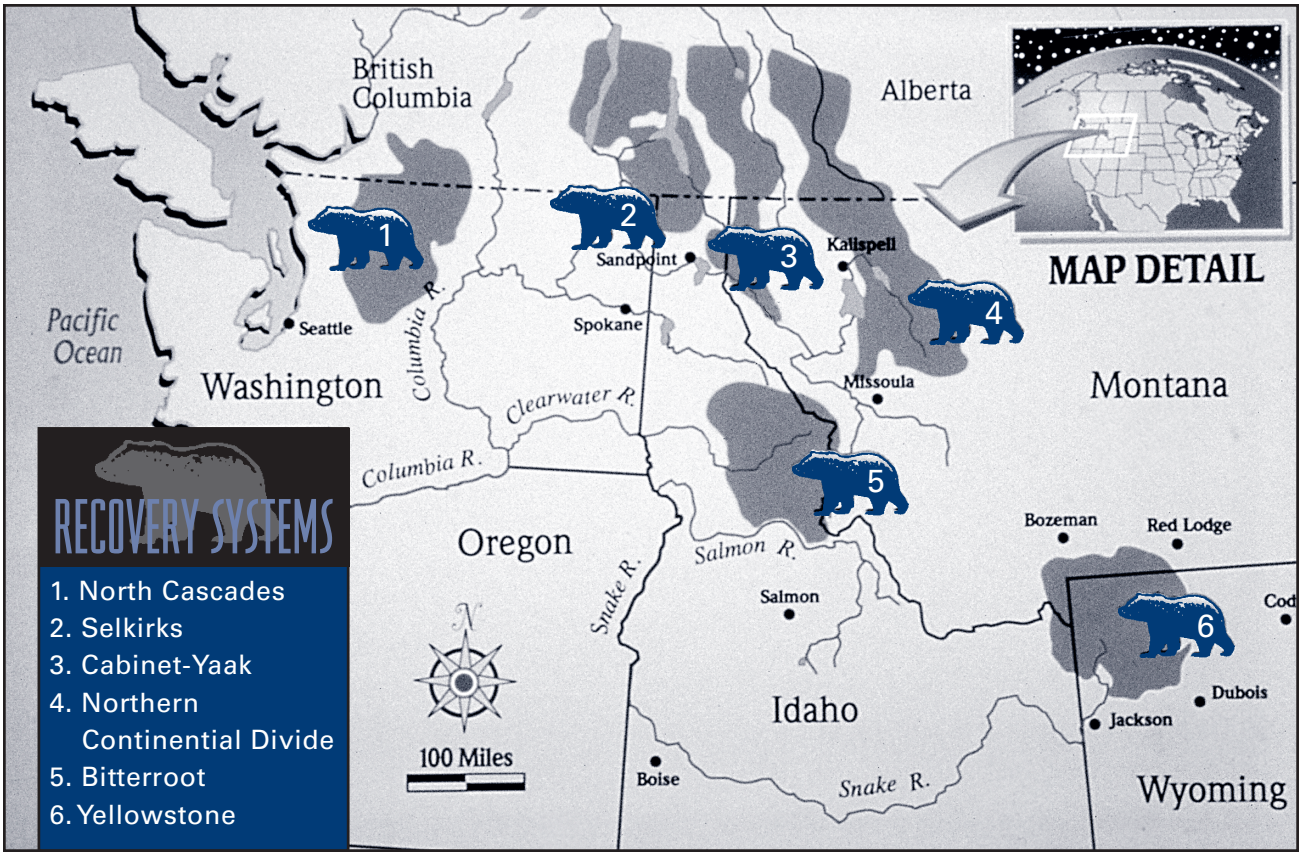
Parkway, significant portions of the Shoshone, Bridger-Teton, Targhee, Gallatin, Beaverhead, and Custer national forests, Bureau of Land Management lands, and more than 86 square miles of state and private lands in Montana, Wyoming, and Idaho. The minimum population estimate in this area is 236 bears and has apparently been increasing in recent years.

Northern Continental Divide Ecosystem

The NCDE contains 9,500 square miles of occupied grizzly bear habitat. It includes Glacier National Park, parts of the Flathead and Blackfeet Indian reservations, parts of five national forests (Flathead, Helena, Kootenai, Lewis and Clark, and Lolo), BLM lands, and a significant area of state and private lands. The NCDE also includes four wilderness areas (Bob Marshall, Mission Mountains, Great Bear, and Scapegoat) and one wilderness study area (Deep Creek North). The area is contiguous to Canadian grizzly bear populations and interchange of bears has been documented. Population estimates for the NCDE vary from 549 to 813 bears. The most recent minimum population estimate is more than 350 bears.

Cabinet-Yaak Ecosystem

The Cabinet-Yaak Ecosystem in northwestern Montana and northeastern Idaho has more than 2,600 square miles of forested and mountainous habitat occupied by grizzly bears. The population in the Cabinet Mountains portion of this area is



Courtesy of Center for Wildlife Information

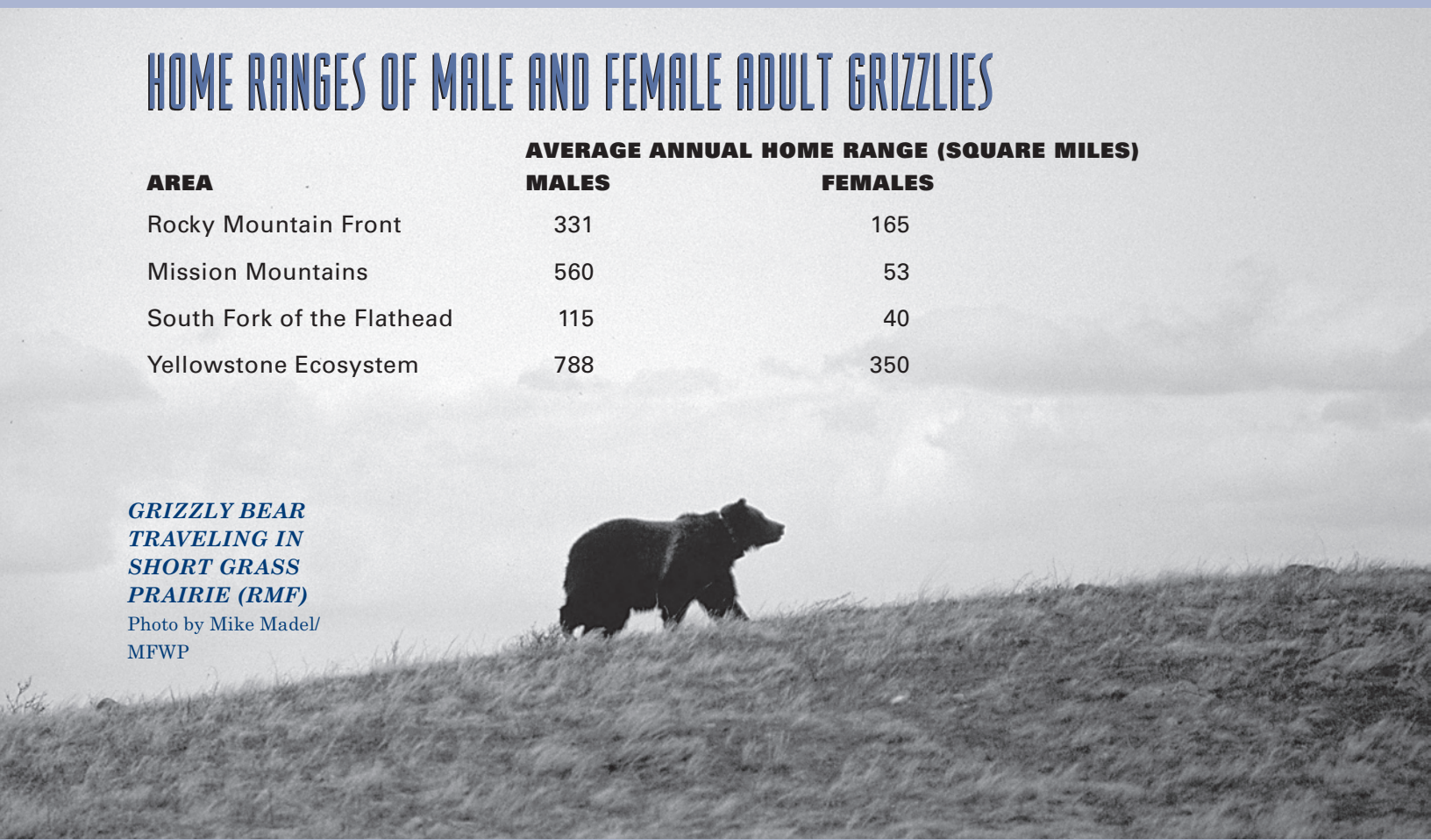
HOME, HOME ON THE RANGE

A bear's home range encompasses all the places it visits for food, water, resting cover, mating, and denning. Home territories are somewhat changeable, and can be broken into seasonal, age-specific, and lifetime ranges. Although bears do have home ranges, there is little evidence they are territorial, because they do not actively defend their home turf. While bears and other wide-ranging mammals usually limit their travels to a general area, the home ranges of individual bears may overlap.

The home ranges of female bears change from year to year depending on if they are alone or have cubs or yearlings at their side. Cubs normally remain with their mother for two years, mastering the skills needed to survive and fend for themselves. A female with cubs uses about half the home range of a lone female. This may be due to fact that youngsters simply don't have the stamina to cover the huge area a lone female may roam in search of food. Family groups likely use the smaller home range more intensely, conserving travel time and energy to devote to cub rearing. Home ranges tend to increase again during the cubs' second summer, often into a range larger than that covered by the female when she is alone.

HOME RANGES OF MALE AND FEMALE ADULT GRIZZLIES

	AVERAGE ANNUAL HOME RANGE (SQUARE MILES)	
AREA	**MALES**	**FEMALES**
Rocky Mountain Front	331	165
Mission Mountains	560	53
South Fork of the Flathead	115	40
Yellowstone Ecosystem	788	350



GRIZZLY BEAR TRAVELING IN SHORT GRASS PRAIRIE (RMF)
Photo by Mike Madel/ MFWP

thought to be 30 to 40 bears in Canada and the United States, a number thought to be stable or increasing slightly. A small but unknown number of the grizzlies live in the Yaak portion. There are grizzly bears north of the international border and interchanges of radio-collared bears across the border have been documented. The recovery goal is 90 to 100 animals.

Travel corridors for grizzly bears between the Cabinets and bear population centers in the Yaak are currently undetermined, and no movement has been documented. However, black bears are known to have moved between the areas. Until further data are available it is reasonable to assume that a viable travel corridor connects the Cabinets and the Yaak. Grizzlies in the area occur at such low densities that detection of specific movements is difficult.

North Cascades Ecosystem

The North Cascades is also contiguous to an area of low grizzly density in Canada. Verified grizzly tracks were documented in 1989 and 1990, and habitat research confirms that the North Cascades evaluation area offers sufficient quality habitat to warrant grizzly bear recovery in the area. Only a few individual bears have been detected using the mountains south of the Canadian border.

Selkirk Mountains Ecosystem

The Selkirk area overlaps the borders of Idaho, Washington, and the Canadian province of British Columbia. In the United States, the area consists of the southern tip of the Selkirk Mountains, which ends about 23 miles south of the international border. The entire recovery area is about 2,100 square miles, of which 900 square miles are in Canada. The current grizzly population is estimated at 40 to 50 bears. The recovery goal is 90 to 100 bears. Scientists believe the current population is stable to increasing. Research continues on both sides of the border. ■

GRIZZLY BEAR DEN IN THE MISSION MOUNTAINS (NORTHERN CONTINENTAL DIVIDE ECOSYSTEM)

Photo by Mike Madel/MFWP

Seasons of the Bear

Visitors to Yellowstone or Glacier national parks often ask where they can go to see a grizzly bear. Since they're in a park and not a zoo, the answer is, "it depends." Wild bears move around freely within their home range. And the truth is, seeing a bear in the wild is a rare occurrence. But we do know something about the bears' habits and where they *might* be in any given season.

SPRING

Grizzly bears can emerge from their dens as early as March, or sleep well into May.

No one knows for sure what causes a bear to emerge from its winter den, even when the den is covered with several feet of snow. Some inner biological alarm clock goes off and urges a bear to get up. Warming temperatures, increasing day length, snow melting around a den entrance, and the smells of spring may all play a role. A grizzly may spend several days awake in and around the den site, sunning itself and resting in daybeds. Eventually, bears move from their high elevation dens to lower, warmer habitats.

Grizzlies on the east front of Montana's Rockies come out of hibernation earlier than black bears. In general, adult males emerge first followed by sub-adult males, then females without cubs. Females with cubs normally come out last. Emergence can be as early as March, in which case the animals could face a bleak, hungry spring, or bears may sleep well into May.

Surprisingly, a grizzly is not immediately hungry, even after six months in a hole in the ground. Its body functions and appetite take

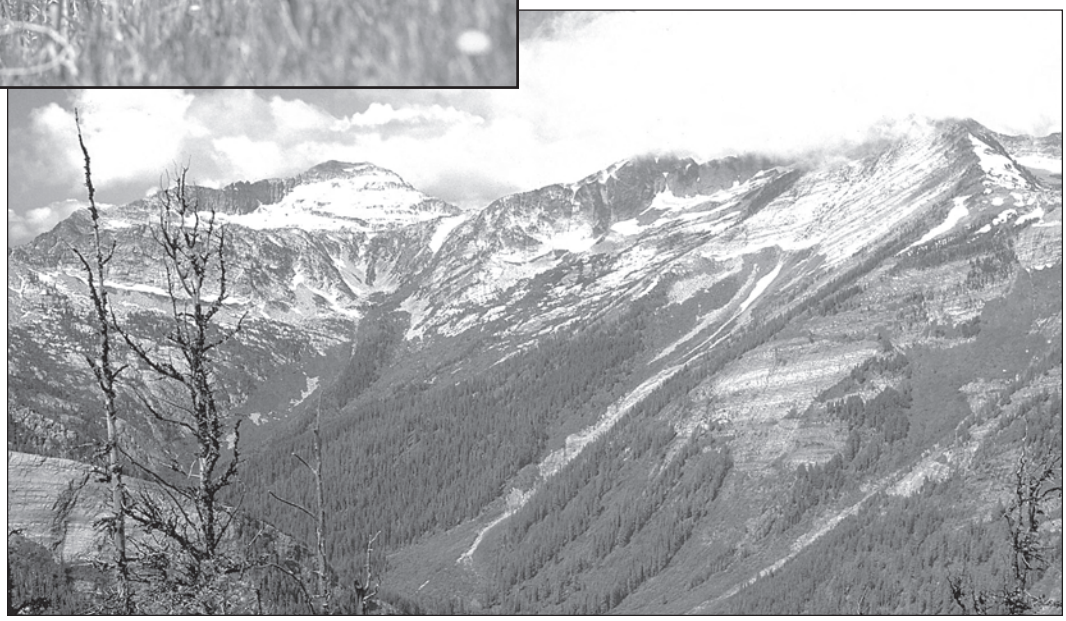
a few days to revive. Once fully awake, bears search out winter-killed animal carcasses, especially elk and deer. That flesh, no matter how frozen or rotten, is ravenously devoured, as it represents a crucial shot of protein that can help sustain a bear until it finds the green vegetation that makes up the majority of its diet.

Because grizzlies usually den at 6,000 feet elevation and above, they typically head to lower elevations for food. Low-lying areas, where streams flow and seeps surface, have the first green shoots of spring. Plants such as angelica, cow parsnip, and snakegrass grow in these spots and hungry bears eagerly seek them out. Bears will often rest in timber and shrubs along streams during the day, then become active at night to graze in meadows. Others feed during the day in open grasslands and avalanche chutes. In the Mission Mountains, biologists found that bears in the backcountry were active by day but nocturnal in areas closer to people.

Research in Yellowstone National Park has shown that in the spring, grizzlies are most active at dawn and dusk. They bed down during the afternoon and in the middle of the night.

Generally, east front grizzlies can be categorized in two additional ways: "seasonal altitudinal migrants" and "front rangers." Immediately after leaving the den, a "seasonal altitudinal migrant" moves to low elevations to eat ungulate

BLACK BEAR GRAZING ON COW PARSNIP
Photo by Lou Kis



UPPER LIBBY CREEK IN THE CABINET MOUNTAINS OF NORTHWEST MONTANA, SHOWING EXCELLENT GRIZZLY BEAR SPRING HABITAT.
Photo by Mike Madel/MFWP

carcasses and early emerging plants. As the season progresses, the "altitude migrant" follows the melting snow and sprouting plants up the mountains. In late summer, these bears return to the valleys to feast on chokecherries and other berries high in nutritional value.

The second group accounts for nearly one-third of the bears along the Rocky Mountain front. "Front rangers" stay at lower elevations for most of the spring and summer. These are the bears that are more likely to come into conflict with people while searching for food on private lands away from the security of the mountains. Humans in grizzly bear country have to be careful their actions don't tempt "front rangers" and other wandering bruins throughout bear country. (See Chapter 5 for tips on avoiding conflicts with bears.)

SUMMER

Peak plant production occurs in late spring and early summer, while animals of all sizes are reproducing. It is a veritable bear smorgasbord. In the weeks leading up to summer all types of animals, from ground squirrels and mice to elk and moose, are giving birth. An omnivore like the grizzly can easily shift from eating roots to devouring a newborn fawn. Most bears stick to vegetation, which makes up 90 percent of their diet during these months. Some grizzlies may learn to feed on elk calves in the first couple weeks of June, but elk calves and deer fawns can run fast enough to escape a hungry bear within a few weeks of birth.

About midsummer, alpine plants lose their ursine nutritional value, and grizzlies begin to switch to other foods. Buffaloberries, serviceberries, and huckleberries all grow west of the Continental Divide, but in some spots huckleberries are the blue plate special. Bears will crowd into berry patches if the fruit is plentiful, but a pecking order seems to be observed. If a berry crop or other major food source fails one year, smaller bears, often sub-adults, are forced into marginal feeding areas or may come into conflict with humans while searching out food.

BISCUIT ROOT, Lomatium cous, PREFERRED ROOT/TUBER EXCAVATED BY GRIZZLY BEARS ON THE RMF

HUCKLEBERRY SHRUBS AND FRUIT, Vaccinium globulare, PREFERRED FRUIT FED ON BY GRIZZY AND BLACK BEARS, LATE SUMMER AND FALL

Photos by Mike Madel/MFWP

Bears east of the Divide also have a wide variety of food sources: huckleberries, chokecherries, currants, buffaloberries, and limber pine nuts. During July and August, grizzlies use upper elevation habitats, feeding on succulent plant foods or grazing on sedges in high meadows and cirques (deep steep-walled basins). They travel along subalpine ridges and dig for roots and tubers, creating small tilled areas for future plant growth. Near several of the highest mountain peaks on both sides of the divide, army cutworm moths congregate in the hundreds of

thousands from late June through August. The moths feed on alpine flowers at night, crawling under large talus rocks during the heat of the day to regulate their body temperature. Bears will search for these areas, then spend days devouring this highly nutritious food. The Confederated Salish and Kootenai tribes have established an 11,495-acre grizzly conservation zone around one of these moth sites. Hikers are not allowed in this area from July 15 to October 1.

IN THE FALL, BEARS ENTER INTO A FEEDING FRENZY KNOWN AS "HYPERPHAGIA."

In the summer many bears feed and travel at night, though activity still peaks at dusk and dawn. Summer brings humans and heat, and bears avoid the two by sleeping during the day. Exceptions occur during berry season, the second half of summer, when bears are often active during the day.

Bears mate in May through July, with the peak usually in early June. It is one of the few times of the year adult bears will tolerate being close to one another. (Bears will also tolerate ursine company when there is an abundance of food, like a salmon run or ripe berry patch.) During mating season, males may compete for breeding females. Occasionally a dominant male may control a female and be the only one to mate with her. Other times, females mate with two or three males. That can lead to a female giving birth to two or three cubs, each with a different father. Females generally breed every three years, typically starting when they are 5 to 7 years old.

ABOVE: BUFFALOBERRY SHRUBS AND FRUIT, Shepherdia Canadensis, PREFERRED FRUIT FED ON BY BEARS THROUGHOUT THE NCDE

RIGHT: AERIAL VIEW OF THE TETON RIVER; DIVERSE RIPARIAN GRIZZLY BEAR HABITAT.
Photos by Mike Madel/MFWP

A LITTLE BIT PREGNANT: DELAYED IMPLANTATION

Evidence indicates that the male mating interaction with the female stimulates release of the egg; this is called induced ovulation. Although the eggs are fertilized at this time, they do not become implanted in the sow's uterus. By mid-summer the fertilized egg has developed into a multicelled blastocyst, but further growth is arrested and the embryo floats freely in the uterus until denning time, later in the fall. This delayed implantation allows the female's body to assess whether or not she has sufficient fat reserves to carry, give birth to, and suckle cubs through her long winter nap. If a bear is not able to gain enough fat, the blastocyst won't attach to the uterine wall, ensuring that a female in poor condition will not be further stressed by reproduction.

FALL

Availability of seasonal foods reaches its climax in late summer and early fall. A bear will rack up many miles searching out these nutritional nuggets, as its body demands a buildup of fat in anticipation of the coming winter. The grizzly's metabolism starts to speed up and the bear enters a food-eating binge known as hyperphagia.

Bears in hyperphagia eat up to 20,000 calories a day, putting on several pounds *each day*. Fat deposits are the bear's ticket to a healthy, happy winter sleep. Without a sufficient buildup of fat, a bear in hibernation may deplete its muscle tissue and emerge from the den seriously weakened in the spring when food is scarce. Bears in that condition may starve to death. Others don't even make it to spring, dying during hibernation. Fall feeding not only affects the physical condition of bears preparing for hibernation but also the ability of pregnant females to give birth to healthy cubs.

What do bears eat during the fall in this heightened state of caloric intake? Berries high in sugar and whitebark pine nuts are important in autumn. After berries disappear in late fall, bears add more meat to their diet.

Hunting season, which takes place during the fall, brings opportunities and dangers to grizzly bears. Successful hunters usually field dress their quarry, leaving the offal or internal organs, which bears will eat if they can find. Occasionally, a bear will be drawn to a hunting camp by the scent of a big game carcass or food left out by humans. Bears in camp create a danger for human and animal alike, and at times bears have to be destroyed.

CHOKEBERRY SHRUBS AND FRUIT, Prunus Virginiana, PREFERRED FRUIT FED ON BY GRIZZY AND BLACK BEARS ALONG THE RMF, LATE SUMMER AND FALL

WINTER

Bears do not have a rigid schedule for going into hibernation. Generally, pregnant females are the first to enter the winter den and adult male grizzlies are last. Denning can occur anytime

Robert Spannring Illustrations © 2001

from October through December, depending on weather and availability of food. In years when food is scarce, bears will den earlier.

Denning areas in the Northern Continental Divide Ecosystem are found between 6,000 and 8,000 feet. Unlike black bears that capitalize on ready-made dens, grizzlies use their long front claws to dig their own dens nearly every year. They generally return to the same area, and several bears may concentrate in an area that offers favorable den conditions.

Some grizzlies line the den chamber floor with vegetation, allowing just enough room to turn around. This minimizes heat loss through the long, high-elevation winter. Snow depth and isolation, not vegetative cover, seem to be the desired factors for den location. Some den sites are in timber, others are in open areas.

Unlike ground squirrels and marmots, bears are not true hibernators. The body temperature of a true hibernator might fall from 97°F to 40°F. Breathing will drop to one breath every six minutes, and the pulse will go from 100 beats a minute to four. Despite this deep slumber, true hibernators must wake every few days. They raise their body temperature and respiration, move around, urinate and sometimes eat, drink, and defecate.

By contrast, a grizzly enters a deep sleep for three to five months. The bear's typical resting heart rate of 40 to 50 beats per minute drops to 8 to 12, though once a day it rises back to 40 beats per minute. Body temperature drops from the upper 90s to the lower 90s. If a bear's body temperature dips below 89°F it will wake up. There is also a drop of up to 50 percent in oxygen consumption as blood is shunted from limbs to heart and brain. While a bear in this state can be aroused, chances are it will sleep solidly for months if there is no outside stimulus. ■

THE CUBS OF WINTER

Near the end of January, pregnant females give birth in the den. Average litter size is two and the cubs are born tiny and helpless. A grizzly's average weight at birth is one pound. Black bears average half a pound. The blind, dependent cubs nurse on rich milk that is 20 to 40 percent fat (human milk contains 4 percent fat) while their mother sleepily stimulates urination and defecation by licking the cubs' anal areas. At emergence, a sow with cubs may have lost 30 to 40 percent of her body weight, while females without cubs may have lost only 15 to 20 percent. Cubs weigh about 8 pounds when they emerge at about four months old, and weigh 20 to 30 pounds by summer, depending on available diet.

While the mother grizzly wakes from her deep sleep from time to time—to give birth, eat the placenta, and clean up her newborns—researchers are not sure that she ever fully comes out of hibernation until the spring. However, the cubs never hibernate. Instead they spend their first winter drinking mother's milk and growing.

Robert Spanning Illustrations © 2001

DENNING CAN OCCUR ANYTIME FROM OCTOBER THROUGH DECEMBER.

THE LIFE OF

A Montana Fish Wildlife & Parks bear management specialist has kept track of the same female grizzly for 21 years—and counting. Here he shares highlights from his journal of Grizzly Bear 500.

JANUARY 1979

In a snow-covered den high on a slope of the Rocky Mountain Front in Montana, a grizzly bear is born. The one-pound cub nestles in her mother's fur. Nourished on rich milk she grows rapidly, and when she emerges from the den in late May with her mother, she weighs about 10 pounds.

MAY 1983

At 4-1/2 years old, the youngster is captured for the first time on a ranch several miles from where she was born. She weighs 235 pounds and is nearly blonde, with darker brown legs. She is outfitted with a radio collar labeled "Grizzly Bear 500", though she will eventually be named "Bonnie," for the rancher on whose land she liked to roam.

JUNE 1983

Grizzly Bear 500 is seen traveling with a male grizzly. She is in estrus, meaning she is receptive to mating. Grizzly Bear 500 spends most of this year on plains and river bottoms west of Choteau, Montana. Her range is only 23 square miles.

1984

At 5 years old, she has her first cubs: one female, two males. The family spends spring, summer, and fall on the prairie and along streams. Her range is now 35 square miles. In late October the family enters a newly dug den for the winter.

1985

Spring and summer are very dry. Grizzly Bear 500 and her 1-year-old cubs get into trouble for the first time, raiding and damaging beehives near houses. The family is captured and moved 58 miles west to the other side of Rocky Mountains. One male yearling dies from injury sustained in the capture. She and the two remaining cubs are back two weeks later and do more damage to the beehives. On June 29, 1985, the bears are captured again and moved farther west, to the Mission Mountains 70 air miles away.

Grizzly Bear 500 and her offspring are back by late summer. The beehives have been removed. A dry summer and little food cause her to roam and increase her range. She weighs 300 pounds and her fur has turned dark brown, though her head and hump are still blond. There is no trouble with people this fall.

GRIZZLY 500

1986

Grizzly Bear 500 emerges from the den in April with her offspring, who are now 2 years old. Soon after emerging, she leaves the youngsters. Although she is not seen with a male, she probably mates this spring.

The newly independent cubs stay together, raiding and damaging beehives. In May, the young female is captured under the porch of a ranch house and moved permanently to the Detroit City Zoo. The young male raids more beehives then disappears.

Using a signal transmitted from her radio collar, biologists keep track of Bonnie through the year until she dens. Her range is now 77 square miles. In October, while in the den, the radio collar quits.

1987-1989

Although her radio collar is not working, Grizzly Bear 500 probably remains in her home range along the Rocky Mountain Front. In the fall of 1988, a large female with her coloring is seen with a yearling. The beehives are now protected with an electric fence.

TOP: GRIZZLY BEAR DAMAGE TO DOMESTIC BEEHIVES.
RIGHT: GRIZZLY BEAR 500 AT A LIVESTOCK CARCASS REDISTRIBUTION SITE IN 1994.
Photos by Mike Madel/MFWP

THE LIFE OF GRIZZLY 500

OCTOBER 1989

Grizzly Bear 500 is captured for the fourth time in 10 years. She has two cubs, and the family has been preying on sheep next to a ranch home. Grizzly Bear 500 is a fat 450 pounds. She is almost all brown, with only a golden head.The cubs are a healthy 120 pounds each.

With a new radio collar, she and the cubs are moved 131 miles, to the Montana-British Columbia border. She goes north into Canada and disappears in mid-October, probably into a den.

1990

In May, Grizzly Bear 500 appears with her yearlings back in Montana. She has a very strong homing instinct and has traveled over some of the roughest mountains in the United States to get back to her home range. In the summer, the female cub is illegally killed and the second cub disappears.

PAINTING OF GRIZZLY BEAR 500. SCENES FROM HER LIFE.

1991

At 12 years old, Grizzly Bear 500 gives birth to two cubs, her fourth litter. It's a dry summer. The bear family damages two bee yards, one with no electric fence and the other with an electric fence that isn't working. The owners fix the fence; Grizzly Bear 500 ventures far to the east, away from the safety of the mountains, but stays out of trouble.

1992

Quiet, rainy year. The family does not have to roam far for food.

1993 AND 1994

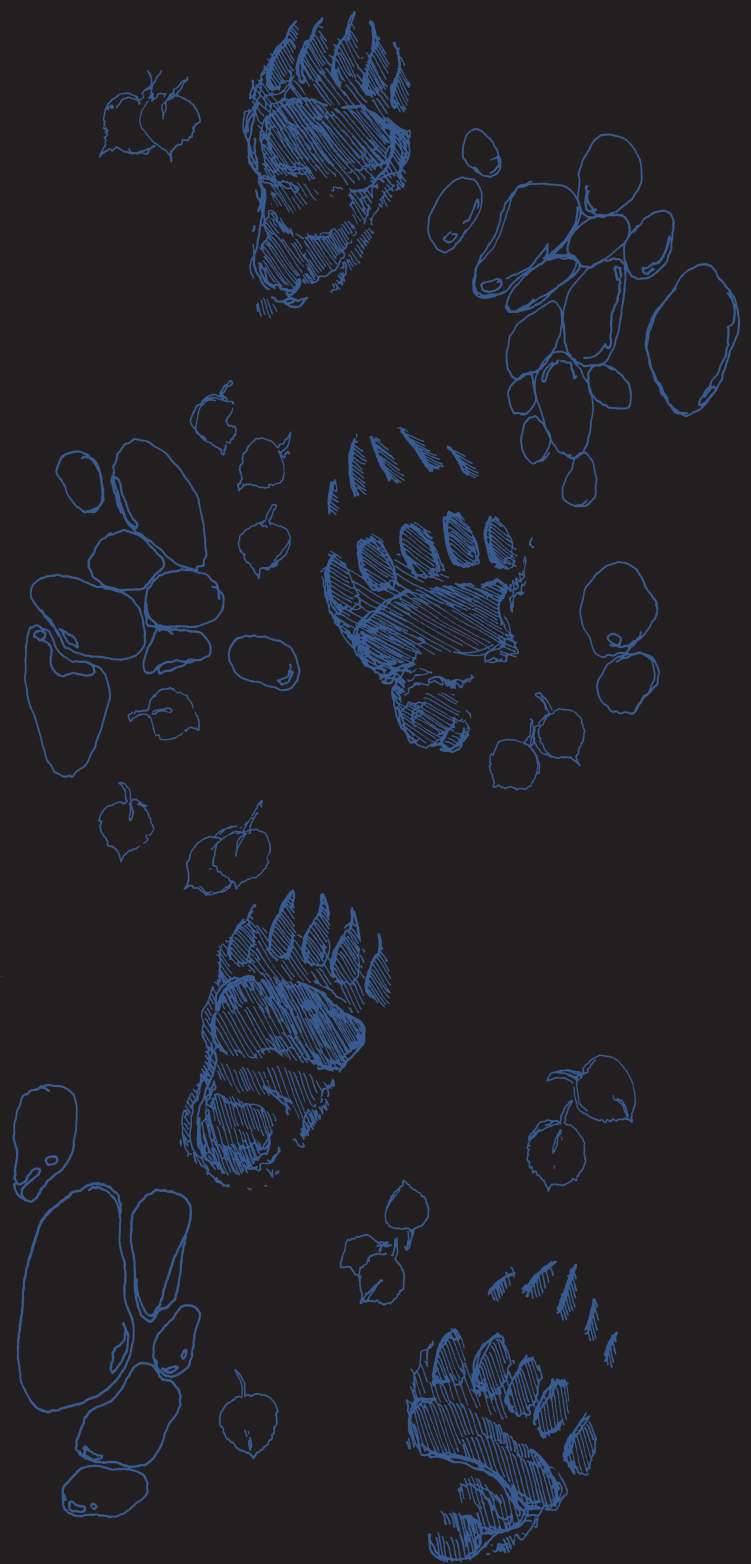
Grizzly Bear 500 separates from her cubs. The cubs play and travel together. No problems with people. A hidden camera takes her picture in the summer of 1994. Now 15 years old, she's chocolate brown, heavy, and healthy. In the fall of 1994, Grizzly Bear 500 loses her radio collar.

SEPTEMBER 1998 TO 2000

Grizzly Bear 500 is captured for the fifth time, trapped on this occasion well outside the recovery line. She is 19 years old and has two small female cubs of the year. The year has been poor for chokecherries, and she has been damaging domestic beehives. She is relocated a short distance up along the eastern mountain front and is monitored for the next two years. This litter of cubs stays with her for two years.

THE FUTURE

At 21 years of age, Grizzly Bear 500 is observed breeding with a large male. She's a survivor.



INQUIRING MANAGERS WANT TO KNOW

Wildlife managers must take into consideration the following when managing grizzly bears:

- Low reproductive rate
- Mortality (natural and human caused)
- Bear-human conflicts
- Cultural importance
- Political pressures
- Impacts of expanding human development
- Natural resource development in bear habitat
- Year-to-year variation in natural food supplies

RADIO TRACKING GRIZZLY BEARS IN THE CABINET MOUNTAINS.
Photos by Mike Madel/MFWP

CHAPTER 5

Management

Bear managers are faced with the dilemma of maintaining a large enough number and wide enough distribution of bears to ensure long-term existence, while keeping bear-human conflicts to a minimum.

In order to manage bears and better estimate numbers, biologists create models of how populations grow and decline, persist or perish. Specific information must be gathered in order to put these models to use. Vital information includes:

- Sex ratio
- Age-specific and sex-specific mortality rates
- Reproductive rates
- Mean litter size
- Age at first reproduction
- Reproductive interval

This type of information is gathered in many ways, depending on the species. For game animals such as deer or elk, hunter harvest statistics might contribute to an annual "snapshot" of the population.

Grizzlies can be more difficult to count than fish or elk. Bears are likely to be in remote, rugged forests and mountains, and are not typically active during the day. However, unduplicated sightings of females with cubs can be used as one index of population change. Advances in DNA work has led to other effective methods of estimating populations in which individual bears can be identified.

DID THE BEAR REALLY GO OVER THE MOUNTAIN?

One of the best ways to keep tabs on a grizzly is to put a radio collar on it. When a grizzly is captured, it is tranquilized and given

GRIZZLY BEAR HAIR SAMPLE SNAGGED ON BARBED WIRE AT A PRE-SELECTED DNA HAIR TRAP SITE, SOUTH FORK TWO MEDICINE RIVER INSET: GRIZZLY BEAR SCAT IN THE SPRING.
Photos by Mike Madel/MFWP

a radio collar, ear tag, and tattoo on the inside of the lip. Also at this time the biologist may weigh and measure the bear, draw blood samples, check the bear's overall health, and perhaps even pull a tooth.

Once activated, the radio collar emits a signal at a unique, assigned frequency. This allows the biologist to follow that individual bear and determine how it's using habitat without even seeing the animal. Planes or helicopters are often used to help track the bears. For young growing bears, a cotton spacer is attached in the collar, which will rot and break apart in approximately one year. This causes the collar to fall off the bear while the bear continues to grow. There are also collars with global positioning systems (GPS) that use satellites to fix an animal's location.

Genetic technology has become a new tool for bear management. It is now possible to identify bear species, individual animals, and gender with DNA samples from hair and droppings ("scat"). Without even handling a bear, scientists can estimate populations and determine the sex ratio for black or grizzly bears from hair collected in remote hair traps. These "hair snares" consist of a strand of barbed wire and a scent lure. DNA extraction from scat is currently less reliable, but holds promise.

MANAGING BEARS, MANAGING PEOPLE

To effectively prevent grizzly bears from coming into conflict with people, biologists must work closely with local communities and residents of bear country. People recreating or living in bear habitat can attract grizzlies with unnatural foods, garbage, or simply odors. Garbage, camping foods, dog food, bird seed, livestock carcasses, and small animals such as poultry, rabbits, and sheep are all bear attractants. A hungry grizzly may damage

property.

Currently, grizzly bears cannot be hunted in Montana. That means wildlife biologists have one less management option. Aversive conditioning techniques left to biologists to reduce human-grizzly conflicts range from rubber bullets and specially trained Karelian bear dogs, to electric fences, trapping and relocation, and propane guns. Techniques for managing humans include road and trail closures and educational outreach.

One of the most significant and successful solutions to human-bear conflict has also been one of the simplest: proper storage of human food and garbage. Bears are opportunists. If new food sources become available,

TELLTALE TEETH

Believe it or not, pulling one bear's tooth can yield information about a whole bear population. New layers of "cementum" grow on a bear's tooth every year, producing annual growth rings that, under a microscope, look like the rings of a tree trunk. The number of rings reveals the bear's age. Knowing the age structure of a population is important for monitoring that population. On the Rocky Mountain Front, bear researchers pull the first premolar from each newly captured grizzly that is at least two years old. Pulling the first premolar, which is small and insignificant, does not leave a gap in the animal's jaw or affect the bear's ability to eat.

The photograph is a very small rectangle of the tooth root, about the size of a common pin head. Photo by Gary Matson.

DUMPSTER TIPPED OVER BY GRIZZLY BEARS
Photo by Mike Madel/MFWP

DOG-GONE BEARS

Although linked by an evolutionary ancestor, bears and dogs do not get along. In fact, they downright dislike each other. That helps biologists who use specially bred and trained Karelian bear dogs to teach bears to stay away from houses, campgrounds, and landfills. In the past, when a "problem" bear was trapped it was usually released far from the scene of the incident. But relocation has had limited success in solving bear problems. With the help of Karelian bear dogs, some managers are trying a new approach developed in large part by biologist Carrie Hunt. Bears are released at the scene of their capture in as unpleasant a manner as possible, in the hope they'll learn they're not welcome there. Wildly barking dogs on leashes (with shouting handlers in tow) chase the bears away. Other team members not handling dogs might also reinforce the message by shooting the bear on the rump with a rubber bullet or shooting off cracker shells.

KARELIAN BEAR DOG TEAM FROM THE WIND RIVER BEAR INSTITUTE
Photo by Mike Madel/MFWP

Karelian bear dogs are a spitz-type breed historically used in Finland and Russia for hunting bears. The black-and-white Karelians look something like a cross between a husky and a border collie, with short, thick coats, curled tails, and wide faces. They generally weigh between 40 and 60 pounds. Dogs (and dog handlers) put to the task of harassing bears have been specially trained for the work. The program has successfully conditioned many bears to stay away from certain areas, and so has probably saved the lives of many bears. In addition to their "real" work, the dogs are great public-education ambassadors.

GRIZZLY BEAR BEING RELOCATED IN CULVERT TRAP BY VEHICLE, (RMF)
Photo by Mike Madel/MFWP

the grizzly is quick to locate them. This includes livestock carrion, human refuse, and domestic beehives.

Ranchers lose livestock due to natural causes, especially during the spring calving season. In the spring of the year, grizzlies intensively seek out livestock carcass bone-yards along the east front of the Rockies. Carcasses are now randomly disposed of in isolated pockets of grizzly spring range by ranchers and wildlife managers. U.S. Forest Service regulations require livestock feed and human food and garbage be made inaccessible to bears.

Electric fences are used to surround beehives, calf pens, sheep bedding grounds, and sometimes livestock in an outfitter's camp. When a bear tries to get through the fence, it gets a zap it does not forget.

Sometimes problem bears

TOP: GRIZZLY BEAR FEEDING IN LIVESTOCK BONE YARD. ABOVE: A PERMANENT ELECTRIC FENCE AROUND A DOMESTIC BEE YARD TO PROTECT BEEHIVES FROM GRIZZLY BEARS.

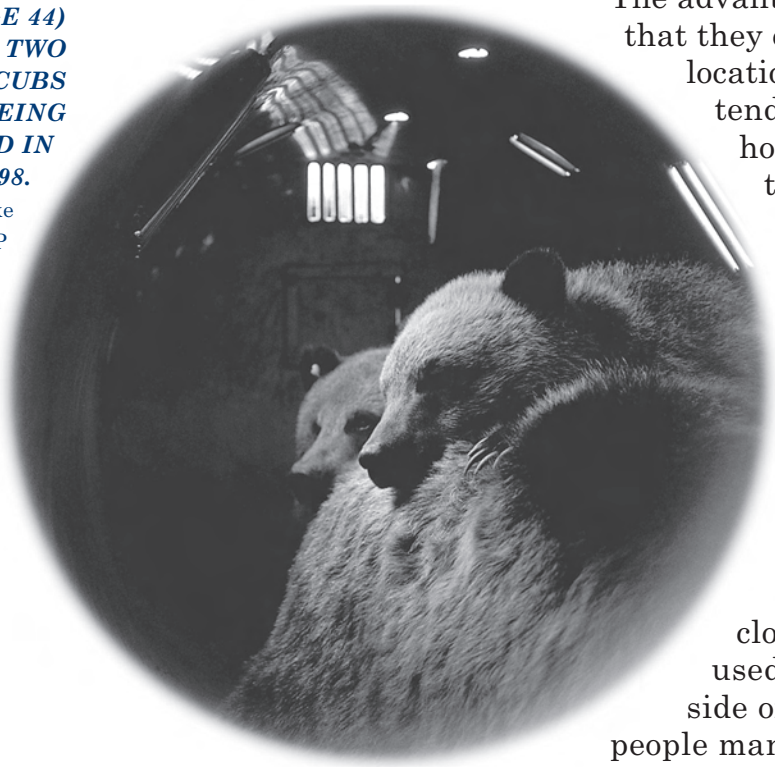
Photos by Mike Madel/MFWP

A FED BEAR IS A DEAD BEAR

The grizzly's life strategy evolved to take advantage of concentrations of high-calorie foods. Human food, pet food, and livestock feed can become addictive to bears. Once a bear discovers a good source of food, it will become habituated to that source—whether in a pasture or on a porch. Grizzly bears can be aggressive in defending their food. "Problem" bears may have to be relocated, but this isn't a perfect solution. Relocated bears can be back in a matter of days. The ones that don't return may not survive in their new location because of unfamiliarity with the area's food resources or denning areas. In any case, a "problem" bear's life is likely to be a short one.

Lead Them Not Into Temptation

- Store garbage cans and barbecue grills in secure garages or sheds
- Never leave dog food outside
- Take bird feeders down in early spring
- String electric fence around beehives
- Don't allow fruit to lay on the ground under fruit trees
- Scatter livestock carcasses away from occupied areas



GRIZZLY BEAR 500 (SEE STORY ON PAGE 44) WITH TWO FEMALE CUBS BEING RELOCATED IN 1998.
Photo by Mike Madel/MFWP

are trapped and relocated. Traps are made from culvert-like pipes with a door that drops shut when the bear enters and grabs a bait. Trapping bears, however, is not usually a cost-effective way to manage the problem. It is a short-term solution to a long-term problem. It's far more cost effective to put an electric fence around a bee yard than to move every bear that destroys the hives. Or better to install a bear-proof dumpster than set traps year after year when trapping and relocation are used they don't always work. Grizzlies have a tremendous memory and the ability to travel long distances, even hundreds of miles, to return to the scene of their misdeeds. If the bear comes back and reoffends, it's likely to be killed. That's why bear managers use other tools to modify bear behavior.

Propane guns are a scare tactic used with limited success. The advantage to propane guns is that they can be set at remote locations and left unattended for days. When hooked up to a propane tank and a timer, the gun goes off periodically, making a loud BANG that scares animals away. However, if left too long in one spot, bears can become familiar to the explosion and the cannon loses its effectiveness. Road and trail closures are occasionally used to solve the person-side of the equation in bear-people management problems.

This takes place mostly in national parks. Closures keep people out of areas where bears have been active. Closures also allow bears to make better use of habitat. Whether authorities are trying to trap a bear in the closed area or simply keep humans and bears apart, closures reduce the potential for conflicts.

Educating people remains the best tool for reducing bear-human interaction. State and federal agencies, Indian tribes, schools, even some towns have programs about bears and how to be safe in bear country. The more people know about bears, the better they will be able to live and recreate in bear country.

Increased understanding of the causes of bear-human conflicts and removing sources of temptation are resulting in some positive results on the Rocky Mountain Front. Problem bear situations decreased 52 percent from 1986 to 1989, and carrion- and garbage-related conflicts have dropped 71 percent. Perhaps because of fewer negative encounters with bears, tolerance for the grizzly has risen. ■

ROAD CLOSURE ON U.S. FOREST SERVICE LANDS TO PROTECT GRIZZLY BEAR/WILDLIFE HABITAT SECURITY.
Photo by Mike Madel/MFWP

PROPANE OPERATED SCARE GUN USED AS A NOISE DETERRENT TO KEEP GRIZZLY BEARS FROM PREYING ON DOMESTIC SHEEP.
Photo by Mike Madel/MFWP

GRIZZLY BEAR FEEDING ON BUFFALOBERRY FRUIT.
Photo by Peter Bengeyfield

Coexistence

In areas where bears and people coexist, human attitudes range from fear, to uneasiness, to appreciation, to respect. Grizzly bears are one of the most "popular" creatures in North America. The grizzly is Montana's state animal and massive traffic jams occur when a grizzly appears near a road in Glacier or Yellowstone national parks. Nearly everyone wants to see a bear, though from a safe distance.

Conflicts between bears and humans in North America have existed for eons. But it wasn't until the 19th century push to settle the Western frontier that this age-old conflict led to serious consequences for bears. Grizzlies were killed because they were a threat to humans and livestock, they were in the way of development, their fur and claws and meat were unique, and it was considered great sport to hunt them. Euro-American settlers thought life would be better without this wild, unpredictable animal. Today, humans are still the single largest cause of grizzly mortality, but a change in attitude is helping the bear sustain and even expand its current populations. Studies have shown that the more people know about bears, the more likely they are to have positive attitudes about living with them, conserving and preserving habitat, and making allowances for their existence in our technical, profit-driven world.

> IT DOES SEEM POSSIBLE THAT NATURE'S MOST DANGEROUS GRIZZLIES ARE NOT NATURE'S BEARS AFTER ALL: INSTEAD THEY ARE MADE DANGEROUS BY HUMAN CARELESSNESS.
> LANCE OLSEN,
> GREAT BEAR FOUNDATION

There will always be times when bears and humans encounter each other. The bear's response will be determined by the situation and its previous experience with humans. The human's response will be determined by the situation, previous experience with bears, and perhaps what he or she has learned about bears from books. More and more wildlife management efforts are focusing on influencing human behavior. In theory, though not always in practice, humans are better learners. The long-term viability of grizzly bears in the lower 48 states and of all bears throughout the world depends to a great extent on our ability to tolerate these magnificent animals and recognize the impact our presence has on them.

HOW TO AVOID A GRIZZLY BEAR

You can minimize bear encounters, or at least surprises, by knowing the places bears frequent.

In the spring and early summer, bears are often in lower elevations along rivers and in avalanche chutes. They love to feed on fresh green grasses and winter-killed animals. In Yellowstone, they will catch cutthroat trout when the fish are spawning in shallow water.

By summer, bears are usually in higher elevations, often in open, park-like areas. They like to eat late summer berries, so berry pickers should be extra careful. Make lots of noise and keep children close-by and supervised at all times.

Come fall, bears are often found in whitebark pine stands

FEMALE GRIZZLY CUB OF GRIZZLY BEAR 500 (SEE STORY ON PAGE 44) CAPTURED IN 1989
Photo by Mike Madel/MFWP

eating pine nuts. Bears also dig for roots in mid-elevation meadows, especially in years when there are fewer pine nuts. In late fall, they move down to lower elevations along riparian areas in a final effort to fatten up before hibernation.

If you cannot avoid these areas, be extra careful when moving through them. Bears like to travel on ridges, saddles, game trails, and along water. They often rest in cool, dark, thick forests. Since some bears are resting during mid-day when most humans are active, follow the precautions for hikers listed above to avoid a close encounter with a sleepy bear. And always carry bear deterrent pepper spray within quick-and-easy reach.

HIKING AND CAMPING IN BEAR COUNTRY

Recreational users of bear habitat are often great supporters of grizzly recovery, but they are also responsible for some of the conflicts. How we act and live in grizzly country can determine the animal's future.

Hiking

■ Make noise. Talking, singing, whistling, yodeling or wearing bells or other noise makers all help to let bears know you are coming. Making noise allows the bear to move away before a confrontation occurs.

■ Bears don't like surprises. Most bears will avoid people and leave an area when they know people are present. Most bear attacks are caused when a bear is encountered at close range. Use caution where visibility or hearing is limited, such as near streams or on wooded trails.

■ Never approach bears. Some bears may seem "tame" until you get too close or threaten their young. Take photos with a telephoto lens. Use binoculars and spotting scopes. The tolerance range of individual bears is unpredictable and widely variable.

■ There is safety in numbers. Travel with friends, and avoid hiking at night.

BE BEAR AWARE

- Never get too close to bears
- Make noise to keep bears away
- Hike and explore in open areas
- Loose dogs and bears don't mix
- Keep a clean camp
- Stay calm and quiet if you meet a bear; move slowly
- Report all bear sightings
- Learn more about bears

IMPORTANT FALL GRIZZLY BEAR HABITAT, HUCKLEBERRY SHRUB FIELDS IN THE CABINET-YAAK ECOSYSTEM. Photo by Mike Madel/MFWP

BEAR TALK

Bear facial expressions, posture, vocalizations (woof and chomping of jaws), and warning movements carry clear messages.

HABITUATED GRIZZLY BEAR BEHAVIOR
Photo by Mike Madel/MFWP

SIGNS OF SUBMISSION:

- Lateral body posture
- Looking away
- Retreating slowly

SIGNS OF DOMINANCE OR AGGRESSION:

- Front forward posture
- Direct gaze
- Forward movement
- Bared teeth
- Holding head high and stretching neck
- Flattening ears against head

DON'T TALK BACK

Your behavior is as important to consider as the bear's:

- Don't make direct eye contact
- Without kneeling or bending down, assume as nonthreatening a posture as possible
- Talk quietly to the bear and slowly back away; don't shout
- Understand that a standing bear is simply trying to gather more information
- Recognize that a lowered head and flattened ears means serious business

THE BIG IFS

- If the bear charges you, freeze; it may be a bluff charge
- If you have pepper spray, point it toward the bear's chest and spray a short burst when the bear is 40 to 50 feet away
- If the bear contacts you (or is about to), drop to the ground and lie flat on your stomach with your hands clasped behind your neck and your elbows on the ground. Lie still, but use your elbows and toes to resist being turned over. If the bear does turn you over, keep rolling until you're back on your stomach.

Photo courtesy of Center for Wildlife Information.

■ Keep your dogs under control. Bears and dogs do not mix. Roaming dogs can easily disturb a bear and may lead an angry bear back to you. In national parks, dogs must be leashed and are not allowed on trails.

■ Carry bear deterrent pepper spray. Carry spray on a belt and know how to use it.

Camping

■ Food attracts bears. A bear will eat anything that you, your livestock or your pets will eat. Store your food in the trunk of your car. Or place food in bear resistant containers. Or hang food and garbage from a pole or tree branch at least 10 feet above ground and 4 feet away from the tree trunk. Do not store food in tents.

■ Keep a clean camp. All garbage, including cooking grease, must be stored unavailable to bears. Wash dishes after each use. Check your pockets and saddlebags for forgotten food every night before sleeping.

■ Odors attract bears. Store food in plastic bags. Use freeze-dried foods. Avoid smelly foods like bacon. Gut and clean fish by water away from your campsite. Puncture fish air bladder and throw remains into water. Personal cleanliness is good insurance. Keep sleeping bags and personal gear clean and free of food odor. Don't sleep in the same clothes you wore when cooking. Don't sleep in the cooking tent. It is best to sleep 100 yards from properly stored food. Leave perfumes, cosmetics and scented products at home. They also may attract bears.

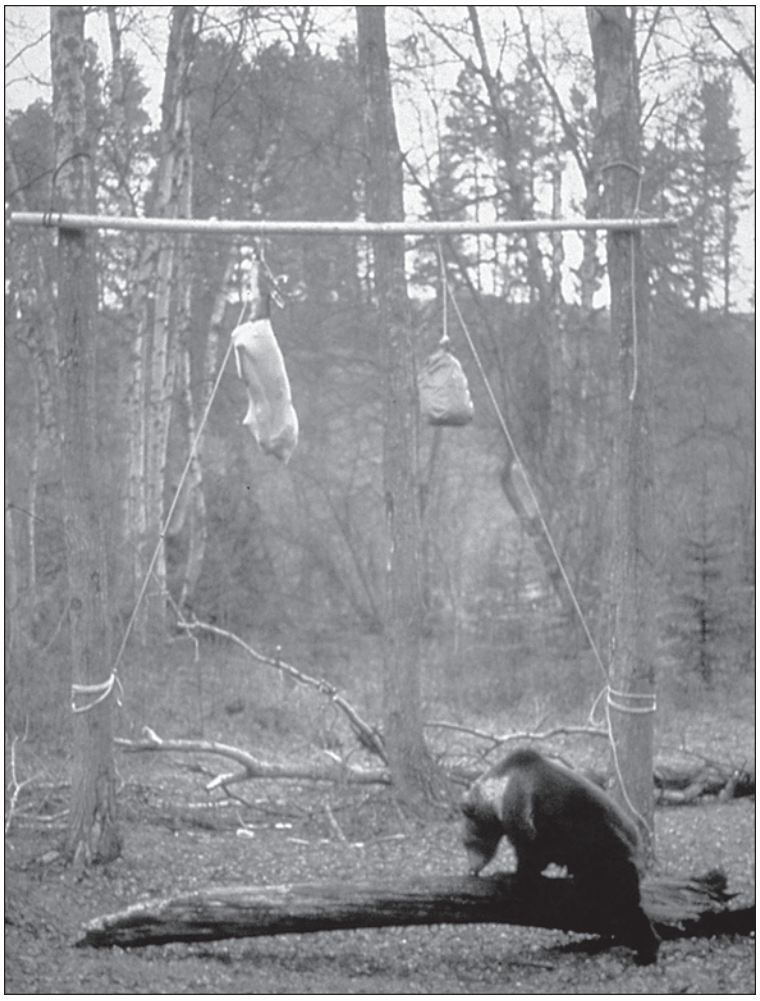
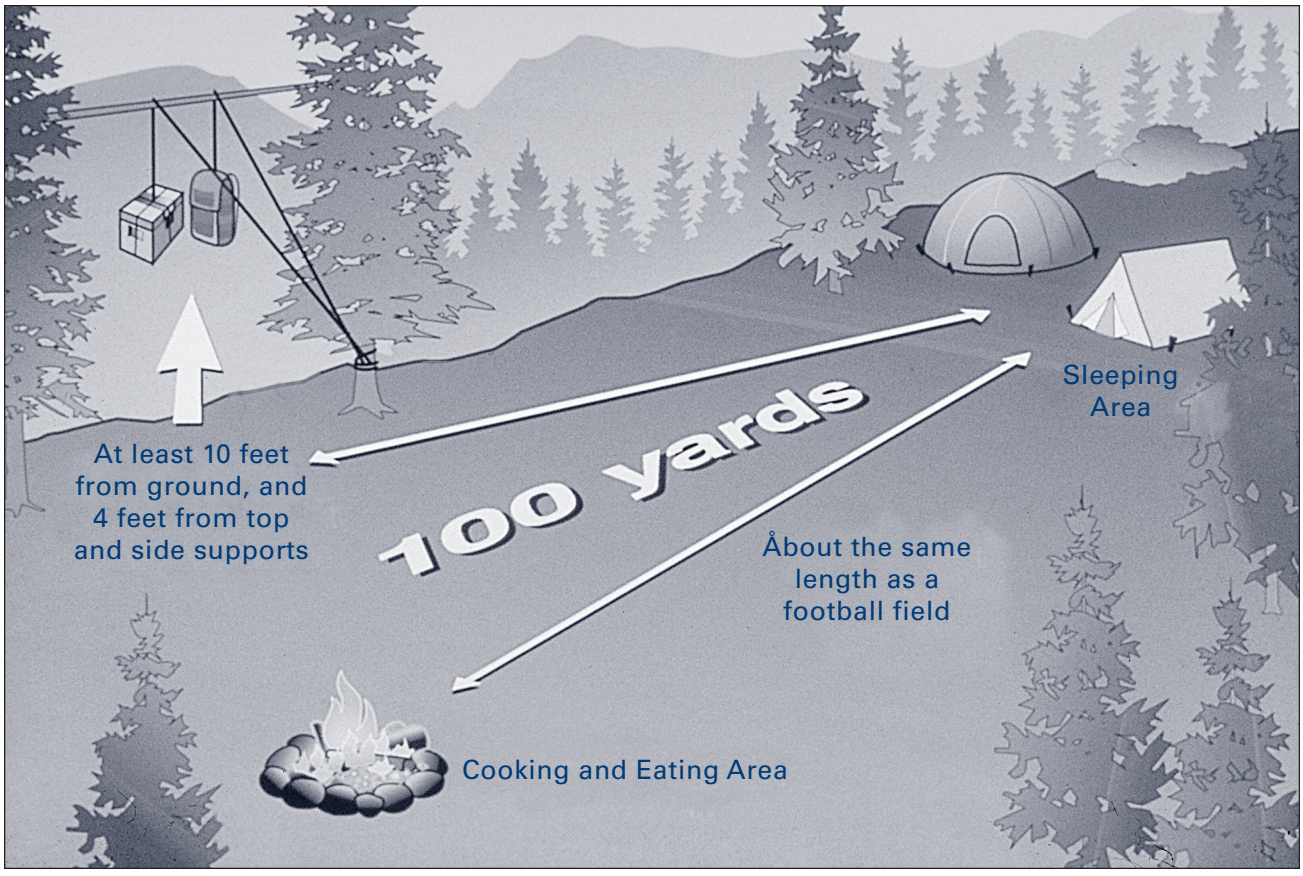


Photo courtesy of Center for Wildlife Information.

■ Keep bear deterrent pepper spray close at hand and know how to use it.

For more information on grizzly bears and their conservation visit the Interagency Grizzly Bear Committee (IGBC) web site: www.r6.fws.gov/igbc. ■

Photo courtesy of Center for Wildlife Information.



BEAR NOTES

Glossary of Bear Terminology

Aa

Alternative – one of a number of things which must be chosen.

Bb

Backcountry – land that is away from settlements or other human development, examples: national parks and national forests.

Bluff – something said or done to fool or mislead others

Boar – the name of a male bear

Cc

Carcass – the dead body of an animal

Carnivore – a flesh-eating animal.

Carrion – dead and decaying flesh.

Co-dominant – being one of two species that are equally dominant in a biological community.

Community – all the people living in the same place; neighborhood; all the living things in any one place.

Conservation – the care, wise use and management of natural resources in order to prevent depletion.

Corm – a rounded, thick, underground stem, covered with membranes or scaly leaves; similar to a bulb.

Dd

Dormancy – an inactive or resting condition in which the life processes of an animal or plant are slowed down or suspended.

Ee

Ecology – the study of the interrelationships among living organisms, and between organisms and all aspects – living and non-living – of their environment.

Ecosystem – a community of living things together with its physical environment, considered as a unit. A community of animals, plants, and bacteria interacting with each other and with their nonliving (chemical and physical) surroundings.

Endangered species – a species of animal or plant that is in immediate danger of becoming extinct.

Extinct – used especially to refer to species of animals or plants whose members have completely disappeared.

Ff

Food chain – a group of animals and plants in a community through which energy, in the form of food, flows.

Forage – to search for, obtain, and consume food.

Gg

Genus – a category of organisms ranking below a family and above a species.

Grizzled – grayish; gray

Hh

Habitat – the arrangement of food, water, shelter (cover), and space that is suitable for an animal's needs. A place where a living thing is naturally found.

Herbivore – feeds predominantly on grass and other plants.

Hibernation – the state of being inactive during a winter so that most or all of an animal's life processes are slowed down or suspended to a greater degree than in dormancy.

Hibernators – animals that pass the winter in a dormant state; to be in an inactive or dormant state.

Hierarchical – in order of importance

Hind – back; rear

Home Range – a specific area where an animal spends the majority of its time.

Kk

Keen – able to do its work quickly and exactly; quickly aware.

Ll

Litter – the young animals produced at one time.

Mm

Mandatory – required.

Nn

Nourish – to make grow; keep alive and well with food.

Nuisance – causing trouble, annoyance or danger.

Oo

Omnivore – an animal that eats both meat and plant life.

Pp

Poaching – killling game illegally.

Predator – an animal that lives by preying on other animals.
Preserve – to protect or save.
Protein – one of the substances containing nitrogen; a necessary part of the cells of plants and animals; contained in foods such as meat, milk, cheese, eggs, and beans

Rr

Range – an area where an animal frequents, includes the extreme limits of this area.

Ss

Scavengers – animals that feed on dead or decaying matter
Sow – a fully grown female bear.
Species – a group of organisms generally capable of interbreeding, represented in taxonomic nomenclature by a Latin term for its genus followed by an adjective for its species, as in *Homo sapiens*. A group of related living things that have certain basic common characteristics.
Subspecies – a taxonomic category that ranks immediately below a species
Survive – to live longer than; to continue to exist or live; to remain

Tt

Territory – land; region; an area such as a nesting ground in which an animal lives and roams that it keeps out others of its kind.
Threatened – a species present in its historic range but whose long-term survival is in peril because of a reduction in numbers – in all or part of this area.
Tracking – keeping track of; following with electronic equipment to observe or monitor a trail that a bear follows.

Ww

Wilderness – a wild place; a region with no people living in it; a place untrammeled by man. Political designation given to federal lands that restrict certain types of human activities such as roads and the use of motorized equipment.

Yy

Yearling – a one-year old animal

BEAR NOTES

Suggested Bear Activities

TEETH, JAWS, AND SKULLS

The Bear Connection

Objectives:

- Compare human and bear teeth, jaws, and skulls
- Make drawings of teeth from imprints
- Analyze life-sized Xeroxes of bear teeth, jaws, and skulls
- Devise an accurate measuring tool

Grade Level: 6 - 8

Pages 27 - 39

YEAR RINGS

WILD About Bear: An Educator's Guide (about Black Bears)

Objectives:

- Figure the age of a bear from the annulation rings in the teeth
- Recognize forms of annulation in other species
- Relate tooth annulation to the bear's summer food supply and winter hibernation
- Create their own annulation map. (year ring map)

LATIN AND GREEK – URSUS AND ARCTOS

The Bear Connection

Objectives:

- Introduce scientific word origins
- Analyze words of Latin and Greek origin

Grade Level: 6 - 8

Pages 98 - 106

SCIENTIFIC CLASSIFICATION

The Bear Connection

Objectives:

- Introduce the science of taxonomy
- Practice analyzing meanings of scientific names

Grade Level: 6 - 8

Pages 107 - 111

BEAR TRACKS

Bears Imagination and Reality:
An Educational Resource for Teachers

Objective:

- Students will be able to compare and contrast bear paw prints and human footprints and relate this to the way bears walk and monitor their environment.

Grade Level: 4 - 6

Pages: 41 - 52

ARTICULATED BEAR

Bears Imagination and Reality:
An Educational Resource for Teachers

Objective:

- Students will be able to demonstrate grizzly bear postures and behaviors by using a student-assembled articulated bear and describe their significance.

Grade Level: 4 - 6

Pages: 53 - 62

A YEAR IN THE LIFE OF A GRIZZLY BEAR

Owner of the Earth Grizzly Bear: Educational Activities

Objectives:

- Learn about seasonal variations in grizzly bear behavior.
- Habitat use and food habitats.
- Investigate how grizzlies raise their cubs.

Grade Level:

Pages: 15 – 24

A HOME IN THE RANGE

The Great Bear: K – 6 Curriculum Guide

Objectives:

- Define home range and territory
- Explain why mammal home range sizes vary from species to species

Grade Levels: 3 – 6

Pages: na

THREE BEARS TALE

International Wildlife Museum: Curriculum Activities Guide for Natural History Exhibits

Objectives:

- The student will compare and contrast the size and shape of three bears – polar, brown (grizzly), and black.
- The student will create a life-size drawing from a scale drawing.

Grade Levels: 4 – 6
Pages: 51 & 52

WHAT BEAR GOES WHERE?

Project WILD: K – 12 Activity Guide

Objectives:

- Identifiy three species of bears and their habitats
- Generalize that animals are adapted in order to live where they do

Grade Levels: K – 3
Pages: 98 & 99

HOW MANY BEARS CAN LIVE IN THIS FOREST?

Project WILD: K – 12 Activity Guide

Objectives:

- Students will define a major component of habitat.
- Students will identify a limiting factor.

Grade Level: 3 – 9
Pages: 134 – 137

Bear Food

(Supplement to "How Many Bears Can Live in This Forest?" – Project WILD)

A Grizzly bear living on the Eastern Front of the Rocky Mountains in Montana would:

- Weigh an average of 350 pounds (mature females) or 575 pounds (mature males)
- Adult females have an average home range of 134 sq. miles and adult males have an average home range of 350 sq. miles
- Both male and female bears consume a " guesstimated" 10 pounds of food per day. (Note: this is just for the purpose of this activity)
- Bears are opportunistic feeders and will consume large quantities when available.

Food Breakdown:

Nuts (Whitebark pine nuts) = 06%	16 cards = 6 points each
Fruits & Berries = 19%	20 cards = 15 points each
Insects = 06%	16 cards = 6 points each
Meat = 09%	12 cards = 12 points each
Plants (including roots & tubers) = 47%	37 cards = 20 points each
Sporophytes (Equisetum spp.) = 03%	12 cards = 4 points each
Total	90%*

*This data was gathered from analysis of 1094 grizzly bear scats. The remaining 10% was unidentifiable material, dirt, and rocks, etc. Information taken from (Aune & Kasworm 1989, East Front Grizzly Bear Study, Montana Dept. of Fish, Wildlife & Parks.

Information for Montana's Northern Continental Divide Ecosystem Bear Food and Home Range Data.

In the lower 48 states, only six areas are found to contain self-perpetuating or remnant populations of grizzly bears. Of these six areas, the Northern Continental Divide (NCD) population is contiguous with Canadian and Alaskan grizzly bear populations and based on population modeling is estimated to support the largest minimum population of grizzly bears. The NCD includes Glacier National Park, parts of the Flathead and Blackfeet Indian Reservations, parts of five national forests (Flathead, Kootenai, Lewis & Clark, and Lolo), four wilderness areas (Bob Marshall, the Great Bear, Mission Mountains and Lincoln Scapegoat), and a significant amount of state and private land.

The following areas in the NCD have been the focus of grizzly bear research studies and will be identified by the following abbreviations: North Fork (NF), South Fork (SF), East Front (EF), and Mission Mtns. (MM).

Bear Food Data (Importance Value %)

Categories	NF	SF	EF	MM
Whitebark pine nuts	00.2	00	01.5	00
Fruits/berries	44	51	17	33
Insects	04	02	06	20
Meat**	01	02	07	00.5
Plants	44	41	56	45
Sporophytes (horsetails)	04	04	01	01
Debris	02	00	11	00

Information based on scat analysis. N = the number of scats analyzed: NF (N = 306); SF (N = 140); EF (N = 1094); MM (N = 293). Data obtained from (Mace & Jonkel 1980; Aune & Kaseworm 1989) Figures are based on Importance Values, obtained by calculating:

$$\textit{Importance Value} = \frac{\%\text{ frequency of occurrence} \times \%\text{ of diet volume}}{100}$$

** Note: because of the digestibility of meat, it is thought to be significantly underestimated through scat analysis techniques.

Home Range Data (square miles)

Area	Adult male	(N)	Adult female	(N)	Subadult male	(N)
NF	171	(5)	77	(5)	60	(4)
SF	110	(5)	38	(2)	100	(4)
EF	350	(18)	134	(43)	421	(9)
MM	537	(3)	51	(2)	—	—

Home Range Data obtained from the following studies: NF (McLellan 1981); SF (Mace & Jonkel 1979, Mace & Jonkel 1980); EF (Aune & Kasworm 1989); MM (Servheen & Lee 1979).

For more information contact Montana Fish, Wildlife & Parks web site: http://fwp.state.mt.us

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BEAR NOTES

Bear Curricula

The Bear Connection: A Curriculum Guide For Middle School and Upper Elementary School Students
Written by Maryann Stephenson
2000

Bears Imagination and Reality: An Educational Resource for Teachers (K-12 Grades)
Prepared by The Science Museum of Minnesota School Services Division
1990

The Everywhere Bear, The Wonder Series
Denver Museum of Natural History & Roberts Rinehart Publishers
Written by Sandra Chisholm Robinson
1992

Know Your Bears (Preschool through 1st Grade)
Montana Fish, Wildlife & Parks
Editor Susan I. Murphy
1995

Investigating Science Through Bears (K-12 Grades)
Teacher Ideas Press
Karlene Ray Smith & Anne Hudson Bush
1994

Owner of the Earth: Grizzly Bear Educational Activities
National Wildlife Federation
1990

Wild About Bear: An Educator's Guide (K-12 Grades)
Idaho Department of Fish and Game
Author Carolyn Duckworth
1995

The Great Bear: K-6 Curriculum Guide
Exploring the biology, distribution, needs, and future of the Grizzly Bear
Accompanies the Traveling Grizzly Teaching Trunk
Brown Bear Resources
1999

Project WILD – K-12 Activity Guide
Western Association of Fish & Wildlife Agencies
Council for Environmental Education
1992

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Activities Guide for Natural History Exhibit
Grades K – 8
International Wildlife Museum
1992

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BEAR NOTES

Bear Resources

EDUCATIONAL TRUNKS

Traveling Grizzly Library

This educational trunk is housed in bear-resistant food lockers of the type used in backcountry camps. Contents include a complete curriculum, books, videos, posters, and workbooks. Materials are geared toward raising awareness of grizzly bears and related issues.
Grade level: K-8
Contact: Brown Bear Resources, 222 N. Higgins, Missoula, MT 59802 (406) 549-4896
Cost: Shipping costs only

Bear Box

Grizzly and black bear trunk is available for pick-up only at various Montana, Fish, Wildlife & Parks locations. It includes a bear hide, video, casts of bear prints, and other hands-on materials
Grade level: K-12
Contact: MFWP offices near you.

Bears of Glacier

This trunk houses a grizzly hide and black bear hide. Also included are skulls, skins, tracks, books, and slides. The trunk is specifically focused on bear management in Glacier National Park and is available for use primarily in Whitefish, Kalispell, Columbia Falls, and West Glacier.
Grade level: K-12
Contact: Glacier National Park Headquarters, West Glacier, MT 59936 (406) 646-7001
Cost: Not Available

BEAR WEBSITES:

The Bear Den
http://www/bearden.org

Bear Trust International
http://www.beartrust.org

Animal Diversity Web
http://animaldiversity.ummz.umich.edu

Montana Fish, Wildlife & Parks
http://fwp.state.mt.us

Great Bear Foundation
http://www.greatbear.org

Wind River Bear Institute
http://www.beardogs.org

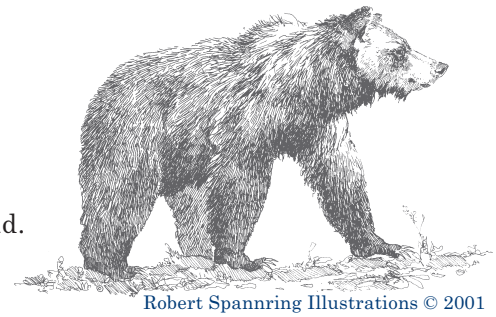
BEAR NOTES

GRIZZLY BEAR SURVEY

NAME: _____

True or False?

T F 1. Grizzly bears attack people on sight.
T F 2. Grizzly mothers usually give birth to two cubs at a time.
T F 3. If grizzly bears see people in the area, the bears will probably leave them alone.
T F 4. The grizzly bear is strictly carnivorous, feeding only on the meat of elk, deer, bison, and other animals.
T F 5. Grizzly bears are always seen in groups of 6 or 7 bears.
T F 6. The grizzly bear is omnivorous, feeding on mostly vegetation (roots, berries, grass) and lesser amounts of meat.
T F 7. Grizzlies hibernate in the winter, so they cannot be wakened by changes in the weather or disturbances near their den until spring.
T F 8. Except during the mating season or when mothers have cub, grizzlies are solitary (prefer to be by themselves), although they sometimes eat at the same places.
T F 9. Grizzlies use the same den every winter.
T F 10. In general, cubs leave their mother after emerging from the den.
T F 11. At birth, grizzly cubs weigh about one pound.
T F 12. Grown-up grizzly females weigh around 800 pounds.
T F 13. Grizzly bears spend the winter in snug, relatively warm dens.
T F 14. When cubs come out of the den in spring, they with around 10 pounds and gain about 30-40 more pounds by fall.
T F 15. Grizzlies are not interested in eating garbage.
T F 16. Grizzlies fish and hunt small mammals more often than they hunt large animals such as elk and bison.
T F 17. Cubs stay with their mothers until they learn to live on their own.
T F 18. Grizzly bears prefer mountaintops to valleys and stay in the high country all summer long.
T F 19. Grizzly bears forage for food in the winter in order to survive.
T F 20. Grizzly bears do not like water and cannot swim.
T F 21. Male grizzlies are larger than females, usually weighing between 300 and 850 pounds.
T F 22. Like humans, grizzlies are only active during the day and sleep at night.
T F 23. Grizzly bears like to be in open spaces, so they almost never go into forests.
T F 24. Cubs are born in January or February and live on their mother's milk until they come out of the den in April.
T F 25. Grizzly mothers do not protect their cubs and often lose track of them.
T F 26. The grizzly's long claws are only used for killing animals.
T F 27. Grizzlies are an endangered species.
T F 28. The future of grizzlies lies with people.
T F 29. If you encounter a bear, run.
T F 30. Grizzlies are a good indicator of ecosystem health.
T F 31. Grizzlies are carnivores.
T F 32. Grizzlies are blonde, black bears are black.
T F 33. Humans can outrun bears when running downhill.
T F 34. A good rule to remember, if a grizzly attacks, play dead.
T F 35. It is illegal to hunt grizzlies in Montana.
T F 36. A grizzlies diet is mostly plant matter.



BEAR NOTES

TEACHER'S KEY:
GRIZZLY BEAR PRE- AND POST- STUDENT SURVEY

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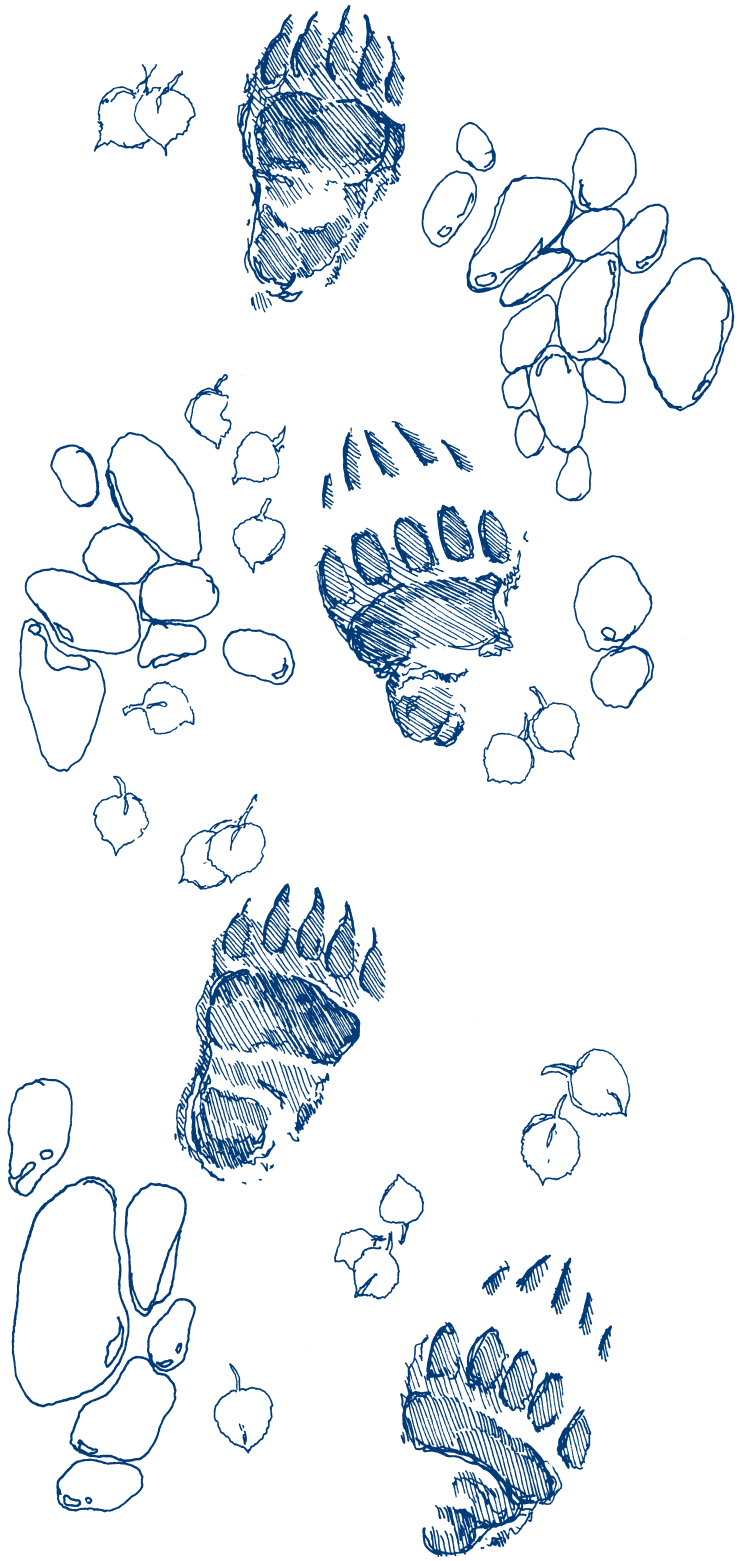
T F 35. It is illegal to hunt grizzlies in Montana.
T F 36. A grizzlies diet is mostly plant matter.



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